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Service

Southwestern
Region



Prescott National Forest

Terrestrial Wildlife Specialist Report

Forest Plan Revision DEIS

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Introduction

This Specialist Report is being prepared in support of the Draft Environmental Impact Statement (DEIS) for the Prescott National Forest Proposed Land Management Plan. It evaluates and discloses the potential environmental consequences to terrestrial wildlife species that may result with the adoption of a revised land management plan. It analyzes the existing 1987 Prescott National Forest land management plan (Forest Service 1987) and three action alternatives that address the need for change revision topics developed for the plan revision process.

This report documents the effects on terrestrial wildlife species that are federally listed (under the Endangered Species Act) as endangered and threatened and their designated critical habitat, federal candidate species, Forest Service sensitive species, migratory birds, bald and golden eagles (protected under the Bald and Golden Eagle Protection Act) and Management Indicator Species in the planning area. The findings of effects for the selected alternative will be addressed in a Biological Assessment and Evaluation (BA & E), which will be prepared later.

Summary of effects determinations

Table 1. Summary of effects for terrestrial species

Species	Status	Determination
Endangered Species Act:		
Mexican spotted owl (MSO)	Threatened	May affect, not likely to adversely affect
MSO Critical Habitat	-----	Not likely to result in adverse modification
Southwestern willow flycatcher (SWWF)	Endangered	No affect
SWWF Critical Habitat	-----	Not likely to result in adverse modification
Western Yellow-billed cuckoo (YBC)	Candidate/Sensitive	No affect
Morafka's desert tortoise	Candidate/Sensitive	No affect
Bald and Golden Eagle Protection Act:		
Bald eagle	Protected	No Take
Golden eagle	Protected	No Take
Migratory Bird Treaty Act:		
Migratory birds	-----	Effects evaluated

Species	Status	Determination	
FS Handbook & FS Manuals – Regional Forester’s Sensitive species			
Bald eagle	Sensitive	No trend toward listing	
Abert’s towhee			
American peregrine falcon			
Common black hawk			
Northern goshawk			
Pale Townsend’s big-eared bat			
Pocketed free-tailed bat			
Western red bat			
Plains harvest mouse			
Gunnison’s prairie dog			
Forest Plan Management Indicator Species analysis			
Pronghorn	Alt A	Alts B & D	Alt C
Habitat quantity	Decrease	Slight decrease	Slight increase
Habitat quality	Some improvement	Moderate improvement	Most improvement
Population trend	Static to decrease	Static or possible increase	Probably increase
Northern goshawk	Alt A	Alts B & D	Alt C
Habitat quantity	Increase	More increase	
Habitat quality	Improved	More improvement	
Population trend	Increase	More increase	

Relevant Laws, Regulations, and Policy that Apply

Below is a summary list of major laws, regulations, and policies that apply to wildlife management on National Forest System lands.

Migratory Bird Treaty Act of 1918

In accordance with the Migratory Bird Treaty Act, Executive Order 13186, and the MOU signed December 2008, this project was evaluated for its effects on migratory birds. The original 1918 statute implemented the 1916 Convention between the U.S. and Great Britain (for Canada) for the protection of migratory birds. Later amendments implemented treaties between the U.S. and Mexico, the U.S. and Japan, and the U.S. and the Soviet Union (now Russia). This law was

originally intended as a hunting statute. Removal and/or destruction of vegetation is NOT a taking under the MBTA.

Bald and Golden Eagle Protection Act of 1940

The purpose of this assessment is to document if there is “take of eagles” with the proposed action, the no action, or other action alternatives on bald and golden eagles protected under the Bald and Golden Eagle Protection Act. In the “Eagle Act”, “take” is defined to include “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb.” The FWS (USDA Fish and Wildlife Service) subsequently defined “disturb” as follows: “Disturb means to agitate or bother a bald eagle or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.” (FWS 2007)

National Environmental Policy Act (NEPA) of 1970

National Environmental Policy Act (NEPA) of 1970, as amended, provides regulations for implementing the procedural provisions of the Act. NEPA requires all federal agencies to give appropriate consideration to environmental factors in the decision making process, to involve affected and interested parties in the analysis process, and to write detailed statements in an Environmental Impact Statement or Environmental Assessment and supporting Specialist Reports that clearly describe the potential impacts of the proposed actions.

The Endangered Species Act of 1973

The Endangered Species Act of 1973 requires Federal agencies to conserve threatened and endangered species and the ecosystem on which they depend. Section 7(a)(1) outlines the procedures for Federal interagency cooperation designed to conserve federally listed species and their designated critical habitats. Section 7(a)(2) outlines the consultation process the requirement that any action authorized, funded, or carried out by a Federal agency would not likely jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of designated critical habitat.

National Forest Management Act (NFMA) of 1976

National Forest Management Act (NFMA) of 1976 requires that habitat be managed to support viable populations of native and desirable non-native vertebrates within the planning area (36 CFR 219.9). USDA regulation 9500-004, adopted in 1983, reinforces the NFMA viability regulation by requiring that habitats on national forests be managed to support viable populations of native and desired non-native plants, fish, and wildlife. For planning purposes, a viable population shall be regarded as one that has the estimated numbers and distribution of reproductive individuals to ensure its continued existence is well distributed in the planning area (36 CFR 219.19). Also, the 1982 planning provisions require that “Forest planning shall provide for diversity of plant and animal communities and tree species consistent with the over-all multiple-use objectives of the planning area” (36 CFR 219.26).

Forest Service Manual 2600 provides directives regarding wildlife, fish, and rare plant management.

Principal Executive Orders relevant to terrestrial wildlife are listed below:

- **Executive Order 13186: Responsibilities of Federal Agencies To Protect Migratory Birds** (50 CFR Parts 10 and 21, January 10, 2001). A complete list of protected species is found at 50 CFR 10.13.

Current Prescott National Forest Plan

The current forest plan was approved in 1987 and has been amended seventeen times. The current Plan addresses uses and resources separately without recognition of interrelationships. As a result, management direction is lacking when guidance is needed to deal with more complex situations. For example, appropriate management responses following uncharacteristic fires need to consider the interactions between soils, vegetation structure, coarse woody debris, cultural resources, economics, and work capacity. In some cases, management under the current Plan is appropriate, but the rate of implementation is too low to alter the direction of trends currently moving away from desired conditions. The current plan revision process illuminated many gaps in the existing plan, pointing to potential needs for change in the existing forest plan:

Goals/Desired Conditions

- are either missing or inadequate to guide projects in many of the Forest's PNVTs, which allows for projects to move forward that do not make progress towards desired conditions.
- are missing for invasive species presence or influence.
- do not integrate desired disturbance processes.
- are sometimes written as standards and/or guidelines, rather than desirable conditions to move toward.

Objectives

- are focused primarily on outputs, rather than progress toward desired conditions, goals and objectives.
- are sometimes expressed as guidelines

Standards and/or Guidelines

- are often unnecessarily prescriptive about how to accomplish a project, instead of focusing on the project outcome.
- do not support attaining desired conditions or accomplishing objectives.
- are duplicative or conflict with direction already found in Forest Service handbooks and manuals, existing laws and regulations, or recovery plans and strategies for federally listed species.
- are based on outdated policy, science, or information.

- sometimes describe purely administrative functions, such as budgeting, rather than Plan components and can be confused with Plan direction.
- Include out of date terminology such as wildland fire use.

Monitoring

- Focuses on outputs, rather than on progress toward attainment of goals/desired conditions.

Plan Direction/Goals for Wildlife and Fish Habitat

- Manage for a diverse, well distributed pattern of habitats for wildlife populations and fish species in cooperation with states and other agencies.
- Cooperate with the Arizona Game and Fish Department to meet or exceed management goals and objectives in the Arizona Cold Water Fisheries Strategic Plan.
- Maintain and/or improve habitat for threatened or endangered species and work toward the eventual recovery and delisting of species through recovery plan implementation.
- Integrate wildlife habitat management activities into all resource practices through intensive coordination.
- Support the goals and objectives of the Arizona Wildlife and Fisheries Comprehensive Plan, as approved by the Southwestern Regional Forester and Director of the Arizona Game and Fish Department.

Plan Revision Need for Change

The Analysis of the Management Situation (AMS) identified five areas where there are priority needs for change under the existing management plan:

1. Restore vegetation arrangements, plant species, and fire to selected ecosystems, while using adaptive management to respond to citizen concerns related to smoke emissions.
2. Maintain/improve watershed integrity to provide desired water quality, quantity, and timing of delivery.
3. Provide sustainable, diverse recreational experiences that consider population demographic characteristics, reflect desires of local communities, avoid overcrowding and user conflicts, and minimize resource damage.
4. Provide desired habitat for native fish.
5. Enhance the scenic value of Prescott NF-provided open space by defining the value of the visual character within areas near or viewed by those in local communities.

Essentially, the first three needs for change could include objectives that may have various effects on terrestrial habitat in the process of moving from the existing conditions toward the desired conditions. “Providing desired habitat for native fish” is analyzed in the Fisheries Specialist Report (Forest Service 2011c) and would not be expected to have any realized effects to terrestrial habitat. For the final item, “defining the value of visual character” would not result in changes to the terrestrial habitat.

The Proposed Forest Plan is organized in three tiers: Desired Conditions, Objectives, and Standards and Guidelines. The desired conditions for an area are the basis for developing the resource objectives for the project or area. The Proposed Forest Plan identifies specific objectives to facilitate moving from existing to desired conditions. Standards and guidelines provide sideboards and guidance for project and activity decision making to help achieve desired conditions and objectives.

Summary of Alternatives

A total of four alternatives are described in the DEIS. A summary of each alternative is described below.

Alternative A – 1987 Forest Plan Direction:

Alternative A would continue management under the existing plan for the Prescott National Forest. The plan provides for timber production, fuelwood harvest, hazardous fuel reduction treatments, prescribed fire and management of unplanned ignitions to meet resource objectives.

Under Alternative A, thinning to alter or restore vegetation structure and composition occurs on about 550 acres per year in ponderosa pine and on 300 acres per year in piñon-juniper vegetation. Fire managers treat about 7,835 acres per year using prescribed fire across all vegetation types.

Alternative B – The Proposed Revised Plan:

Alternative B represents approximately 1-2 years of collaborative work with citizens, agencies, and Prescott NF employees in an iterative manner to respond to suggested changes in proposed plan components. It places an emphasis on restoring vegetation, structure, composition, and desired characteristics of fire to five ecosystems that are moderately or highly-departed from desired conditions. It also addresses citizen concerns related to smoke emissions and responds to the anticipated effects of climate change. Eight potential wilderness areas are recommended.

Alternative B would increase the amount of thinning and prescribed fire occurring across the landscape. Planned ignitions would range from 10,600 to 25,300 acres per year on average. Thinning treatments would range from 1,750 to 6,500 acres per year on average. Additionally, wildland urban interface (WUI) areas would be given high priority for fuel reduction treatments, using mechanical methods and/or domestic animals in lieu of planned ignitions.

Alternative C – Vegetation and Wildlife Habitat Emphasis:

Alternative C includes many of the same components of Alternative B, however, it responds to public comments to increase emphasis on vegetation trends within both grassland and ponderosa pine types. This focus improves vegetation conditions within important wildlife habitats and places less emphasis on some vegetation communities and recreational components. In addition, Alternative C includes more management treatment for native fish and other aquatic species and pronghorn habitats; there is much less emphasis on recommendation of potential wilderness areas.

Alternative C would emphasize a higher range of prescribed fire and a lower range of thinning activity compared to Alternatives A and B. Planned ignitions would range from 15,500 to 22,800

acres per year on average and would be focused in grassland and ponderosa pine vegetation. Thinning treatments would range from 1,750 to 4,000 acres per year on average.

Alternative D – Dispersed Recreation Emphasis:

Alternative D includes an emphasis on providing increased dispersed recreation opportunities. Vegetation treatments would be similar to those in Alternative B or slightly reduced. Emphasis on pronghorn and native fish would be identical to Alternative B. Within recreational opportunities, there would be reduced emphasis on developed recreation, such as campgrounds, and increased emphasis on dispersed recreation such as adding trails, improving trailheads and adding designated dispersed sites. This alternative also includes recommendation of the highest number of potential wilderness areas.

Alternative D would emphasize less prescribed fire than Alternatives B and C, and similar or less thinning activity. Planned ignitions would range from 10,600 to 18,800 acres per year on average. Thinning treatments would range from 1,750 to 4,000 acres per year on average (the same as Alternative C).

Methodology and Analysis Process

Plan decisions in the current forest plan and the alternatives include goals/desired conditions, objectives, standards/guidelines, suitability of uses, special areas, and monitoring. The management actions to be considered in this evaluation include the objectives identified to meet the need for change on the forest. These include the use of prescribed fire and mechanical treatments to restore vegetation and natural fire regimes to the ecosystem, projects to maintain or improve watershed integrity, projects to maintain and provide for recreational experiences, projects to maintain or improve aquatic and wildlife habitat, and opportunities to enhance the scenic value. A concurrent decision in the forest revision process included in this evaluation is the designation of wilderness areas.

In this analysis, the following assumptions have been made:

- The land management plan provides a programmatic framework for future site-specific actions.
- Land management plans do not have direct effects. They do not authorize or mandate any site-specific projects or activities (including ground-disturbing actions).
- Land management plans may have implications, or environmental consequences, of managing the forests under a programmatic framework.
- Law, policy, and regulations will be followed when planning or implementing site-specific projects and activities.
- The plan decisions (desired conditions, objectives, standards, guidelines, management areas, monitoring) will be followed when planning or implementing site-specific projects and activities.
- Monitoring will occur and the land management plan will be amended, as needed.
- Management activities that help ecosystems accommodate changes adaptively will improve ecosystem resiliency in the long-term.

- The planning timeframe is 10 years; other timeframes may be analyzed to compare anticipated trends into the future.

Desired Conditions for Terrestrial Species

Desired conditions are the focus of the Forest Plan and are the basis for developing objectives and other plan components. These desired conditions apply to all four alternatives. Two Terrestrial Wildlife DC with several components were developed for the plan revision:

Table 2. Desired Conditions for terrestrial wildlife

DC-Wildlife-1	<ul style="list-style-type: none"> • Known locations of Southwestern Region Sensitive Species are protected. Habitats that support populations of these species are enhanced to facilitate their protection. • Fire plays a role in maintaining wildlife habitat for species associated with fire-adapted systems. • Wildlife in habitats associated with animal movement corridors are free from human harassment¹. • Avian and mammal mortality and habitat alteration associated with existing and proposed power lines, corridors, energy development (i.e., wind and solar), and cell towers is minimized through the implementation of design features and guidelines. • Terrestrial habitats are free of negative impacts from non-native or feral species.
DC-Wildlife-2	<ul style="list-style-type: none"> • Vegetation conditions for federally listed species are consistent with existing recovery plans. • Ecological conditions provide habitat for associated federally-listed species. Habitat conditions generally contribute to survival and recovery and contribute to the de-listing of species under the Endangered Species Act (ESA) of 1973 (P.L. 93-205). • Improved habitats for Candidate and Proposed species help preclude species listings as Threatened or Endangered under ESA.

Desired Conditions for other resource areas that support managing for wildlife resources are listed in Table 3.

¹ Human activities which could potentially harass wildlife include, but are not limited to: shooting, camping in developed sites, and OHV recreation.

Table 3. Desired Conditions for other resource areas that support wildlife resources.

Resource	Desired Condition	Benefitting wildlife resource
DC-Ecosystem Resilience-1	<ul style="list-style-type: none"> Ecological conditions for habitat quality, distribution, and abundance contribute to self-sustaining populations of terrestrial and aquatic plant and animals. Conditions provide for the life-history, distribution, and natural population fluctuations of the species within the capability of the ecosystem. Contiguous blocks of habitat are interconnected, support a wide array of native species, and allow for genetic and behavioral interactions. 	All status of species
DC-Ecosystem Resilience-1	Habitat quality distribution and abundance exist to support recovery and/or stabilization of federally listed and other species.	Federally protected and sensitive species
DC-Watershed-2	<ul style="list-style-type: none"> Riparian corridors are intact and are trending toward properly functioning condition across the landscape. Access to food, water, cover, nesting areas, and protected pathways for aquatic and upland species is maintained between aquatic and upland components (e.g., logs, ground vegetation). 	All status of species
DC-Veg-5	<ul style="list-style-type: none"> Locally endemic plant communities are intact and functioning. Unique plant community habitats (e.g., limestone cliffs, margins of seeps and springs, Verde Valley Formation, basalt-lava flows/cinders, calcareous soil/alkaline clay, canyons/cliffs and ledges, granitic soils/igneous rocks, sandstone rocks/soils and riparian forest) are present to maintain well-distributed populations of associated native plant species. Native plants provide nectar, floral diversity, and pollen throughout the seasons that pollinator species are active. Desired habitat conditions promote pollinator success and survival. 	All status of species

The overall assumption of ecosystem management is that managing systems within the range of conditions that native species have experienced over evolutionary time is likely to maintain populations of those species. While the objectives for some resource areas may have the potential for unwanted impacts to wildlife resources, Standards and Guidelines are designed to ensure that wildlife resource priorities are appropriately considered and incorporated in project design and implementation. Standards must be followed and can only change with a forest plan amendment. Guidelines must be followed, but may be modified somewhat for a specific project if the intent of the guideline is followed and the deviation is addressed in the decision document with supporting rationale. Alternative A uses the management direction in the current Land Management Plan. Table 4 lists Terrestrial Wildlife Standards and Guidelines as well as Standards and Guidelines from other resource areas for Alternatives B-D in the Draft Forest Plan Revision that would ensure wildlife consideration in project design and implementation.

Table 4. Forest Plan Standards and Guidelines supporting wildlife management.

Resource	Standard or Guideline
Guide- WL-1	Habitat management objectives and terrestrial species protection measures from approved recovery plans should be applied to activities occurring within federally listed species habitat ² .
Guide- WL-2	<ul style="list-style-type: none"> • Design features and mitigation measures shall be incorporated to ensure compliance with other Federal laws governing wildlife such as but not limited to Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. • Design features and/or mitigation measures should be incorporated in all Forest Service projects as needed to insure that Southwestern Region Sensitive Species do not trend toward listing as threatened or endangered species.
Guide- WL-3	<p>For pronghorn antelope the following should occur:</p> <ul style="list-style-type: none"> • When scheduling activities in pronghorn fawning areas, provide adequate cover and time activities to minimize disturbance. • Evaluate opportunities to enhance pronghorn migration routes when identifying priorities for vegetation treatments within grassland PNVTs. • Use fencing that allows pronghorn passage when replacing fences or building new fences. Specifications should be based on most recent AZGFD fencing guidelines related to wire heights, distance between posts, and distances between strands of fence wire. • As pronghorn habitat improvements to maintain pronghorn travelways are proposed, work done by AZGFD and other partners should be considered. • Within identified pronghorn habitat, juniper trees that have been cut down should be treated so that pieces lie no higher than 18 inches above the ground.
Guide-WL-4	<p>For cavity nesting birds:</p> <ul style="list-style-type: none"> • Snags should be retained at levels indicated in desired conditions, if available, and replaced at natural recruitment rates.
Guide- WL-5	<p>For raptors, as each nest site (e.g. stick nest, cliff, ledge, cavity) is identified:</p> <ul style="list-style-type: none"> • Size and structure of raptor species' nest stands³ should be maintained. • Disturbance at nest sites during the breeding season should be minimized.

² Recovery plans can be found on the following website: <http://www.fws.gov/endangered/>

³ A nest stand includes the nest site and surrounding area that provides nest protection, and desired vegetative structure, to enhance reproductive success of the species using the nest.

Resource	Standard or Guideline
Guide- WL-6	<p>For bats the following should occur:</p> <ul style="list-style-type: none"> • Where known bat use and concentrations of bats occur (e.g., maternity colonies, hibernacula or seasonal roosts), measures to maintain habitat and reduce disturbance by human activities through use of seasonal or permanent access restrictions should be used. These habitats generally include abandoned mines, caves, bridges, rock crevasses, old buildings, or tree snags. • Bat occupancy should be assessed when considering closing abandoned mines (and caves). • When closing mines occupied by bats, use appropriate closure protocols, and consider the installation of bat-friendly closure devices. <p>Containment and decontamination procedures should be used to avoid spread of white-nose syndrome (<i>Geomyces destructans</i> fungus). Forest Service guidance dated July 21, 2010 or most recent decontamination procedures should be used.</p>
Guide- WL-7	<p>Where Goshawks exist:</p> <ul style="list-style-type: none"> • A minimum of 3 nest areas and 3 replacement nest areas should be located per territory. Goshawk nest and replacement nest areas should generally be located in drainages, at the base of slopes, and on northerly (NW to NE) aspects. Nest areas should generally be 25 to 30 acres in size. • Goshawk Post-fledging Family Areas (PFAs) of approximately 420 acres in size should be designated surrounding the nest sites. • Human presence should be minimized in occupied goshawk nest areas during nesting season of March 1 through September 30. <p>Management activities and human uses for which the Forest Service issues permits (excluding livestock permits) should be restricted within active nest stands during the active nesting period unless disturbance is not likely to result in nest abandonment.</p>
Guide- WL-8	<p>Projects should be designed to minimize the long-term impacts to wildlife from human activities in or adjacent to animal movement corridors.</p>
Guide-WS-3	<p>Riparian dependent resources should be managed to maintain and improve productivity and diversity of riparian dependent species. Riparian communities should provide for the sustainability of aquatic and riparian species.</p>
Std-Plants-2	<p>When treating non-native and invasive plant species to protect endangered, threatened, proposed, and candidate wildlife and plant species and their habitats, design features in Appendix B of the Final Environmental Impact Statement (FEIS) for Integrated Treatment of Noxious or Invasive Weeds (Forest Service, 2005a) or the most current direction must be followed.</p>

Resource	Standard or Guideline
Guide- Lands- 2	<p>When responding to land exchange proposals as presented, consideration should be given to the effects they have on visual characteristics; cultural resources; recreation opportunities; threatened, endangered or sensitive species impacts; and community vision statements. In coordination with general factors to consider in 36 CFR 254.3(1), proposals for acquisition should meet one or more of the following criteria:</p> <ul style="list-style-type: none"> • Lands that contain important wildlife habitat, including that needed for species viability, such as habitat needed to maintain migration patterns or important habitat linkages • Wetlands, riparian areas and other water-oriented lands • Lands that contain unique, natural, or cultural values
Guide- Lands- 4	<p>The following guidelines apply to communication sites:</p> <ul style="list-style-type: none"> • New and replacement towers should be self-supporting, and should incorporate design features to minimize bat and bird impacts. • Wildlife movement corridors should be considered when energy sources and transmission lines are located.
Guide- Lands-5	<p>Energy sources should be managed according to the guidelines below:</p> <ul style="list-style-type: none"> • Towers for 69 kV lines and above, should be self-weathering with non-reflective lines, and where geomorphology allows, located in non-sensitive⁴ areas that blend in with the terrain or background. • Current USFWS and AZGFD guidelines for wind and solar energy development should be considered for avoiding or minimizing impacts to wildlife.
Guide – Locatable minerals - 2	Mitigation measures should be used for Southwestern Region Sensitive Species to minimize impacts to populations due to mineral exploration or extraction activity.
Guide – Minerals -5	Occupied Southwestern Region Sensitive Species habitat should be avoided during development of new mineral material extraction sites. Heavy equipment use and material removal should not take place in occupied Southwestern Region Sensitive Species habitat within current or new permitted sandstone or dolomitic limestone quarries.
Standard- Range -1	Water troughs shall incorporate escape devices to prevent animal entrapments.

⁴ Examples of sensitive areas are important wildlife habitat, waterways, visually unique areas, heritage, occupied Region 3 Sensitive Species habitat, and recreation areas.

Resource	Standard or Guideline
Range – 2G	<p>For structural improvements, the following should be considered:</p> <ul style="list-style-type: none"> • Implement design features that incorporate wildlife needs and reduce barriers to movement and entrapment hazards. • Consider wildlife needs in fence placement and design to reduce barriers and hazards to movement and minimize chances of entrapment. • Remove fencing when it is no longer needed.
Guide-Trans-1	Where the creation of alternate routes does not lead to excessive damage to other resources, opportunities to relocate and restore motorized roads or trails in riparian areas, and in proximity to other water courses, should have priority.
Guide-Trans-3	Roads and trails should be designed to not impede terrestrial and aquatic wildlife species movement and habitat connectivity.
Guide-Trans-4	Seasonal road and trail closures or other management methods should be used to manage and protect resources and infrastructure.
Guide-Trans-5	To avoid unintended entrapment, wildlife friendly design for cattle guards should be incorporated for new and replacement installations.

The evaluation of effects of the Forest Plan alternatives on terrestrial species will use the following indicators in Table 5.

Table 5. Terrestrial wildlife analysis indicators for comparison of Forest Plan alternatives

Species consideration between existing condition and alternatives.	Indicator for Alternative Comparison
How would objectives listed in each alternative contribute to the recovery of federally listed or proposed species?	<ul style="list-style-type: none"> ➤ Effects of changes to associated PNVF on each species. ➤ Effects of impacts to associated habitat features on each species. ➤ Assessment of Proposed Forest Plan's design to provide for compliance with Recovery Plans and Conservation Strategies and using the best available science.
How would objectives listed in each alternative contribute to sensitive species management so as to not trend toward federal listing?	<ul style="list-style-type: none"> ➤ Effects of changes to associated PNVF on each species. ➤ Effects of impacts to associated habitat features on each species. ➤ Assessment of S&G's to provide for sensitive species management.

Species consideration between existing condition and alternatives.	Indicator for Alternative Comparison
How would objectives listed in each alternative impact migratory birds and provide for compliance with the MBTA?	<ul style="list-style-type: none"> ➤ Effects of changes to PNVTs on migratory birds. ➤ Effects of impacts to habitat features. ➤ Potential for impacts from proposed projects.
How would standards and guidelines listed in each alternative ensure compliance with the Eagle Act?	<ul style="list-style-type: none"> ➤ Assessment of potential for programmatic “take” under the Eagle Act.
How would objectives listed in each alternative affect Management Indicator Species?	<ul style="list-style-type: none"> ➤ Trends in habitat quantity, quality, and distribution at landscape scale based on effects to relevant PNV. ➤ Assessment of population trends relative to habitat condition trends.

Description of Affected Environment

Terrestrial Ecosystem

Vegetation (Forest Service 2011b)

At least eleven vegetation types occur across Prescott NF lands. They include a variety of forms from cactus and shrub communities to grasslands, woodlands, and forest. The vegetation patterns observed are responsive not only to natural and human disturbances, but also to the local abiotic features of the landscape (e.g., precipitation, average annual temperatures, topography, aspect, slope, soil texture, etc.). The term Potential Natural Vegetation Type (PNVT) is used throughout this report to refer to these coarse-scale vegetation groups that share similar abiotic features and natural disturbances such as fire and drought cycles.

As shown in Table 6 below, eight vegetation types or PNVTs comprise 98 percent of the Prescott NF. Three minor PNVTs occupy the remaining two percent of the Prescott NF.

Table 6. PNVTs found on the Prescott NF

Vegetation Group Name (PNVT)	Acres	Percent	Description
Major PNVTs			
Semi-Desert Grassland (SDG)	125,712	10.0%	Low-elevation grasslands (3,000 to 4,500 ft.)
Great Basin/CP Grassland (CPGB)	38,389	3.1%	Mid-elevation grasslands (4,700 to 7,600 ft.)
Piñon-Juniper Grassland (JUG)	137,274	10.9%	P-J Community
Piñon-Juniper Evergreen Shrub (PJC)	463,296	36.9%	P-J Community

Vegetation Group Name (PNVT)	Acres	Percent	Description
Piñon-Juniper Woodland (PJW)	36,263	2.9%	P-J Community
Interior Chaparral (CHAP)	315,445	25.2%	Mid-elevation shrublands (3,400 to 6,600 feet)
Ponderosa Pine-Evergreen Oak (PPE)	63,539	5.1%	High-elevation pine forests (6,000 to 7,500 ft.)
Ponderosa Pine-Gambel Oak (PPO)	49,052	3.9%	High-elevation pine forests (5,500 to 9,000 ft.)
Totals:	1,228,999	98.0%	
Minor PNVTs			
Riparian Gallery/Forest (RGF)	12,439	1.0%	Warm-water Riparian Communities
Desert Communities (DC)	5,919	0.5%	Low-elevation deserts
Madrean Encinal Woodland (MEW)	5,593	0.5%	Mid-elevation Oak woodlands (3,600 to 6,500 feet)
Totals:	23,951	2.0%	
Totals:	1,252,950	100%	11 Vegetation Groups (PNVTs)

A summary of current conditions and trends for the major PNVTs found on the Prescott NF are described next. These ecological conditions are the foundation for assessing terrestrial wildlife habitat trends based on the consequences of the proposed vegetation and fire related management activities.

Grasslands

There are two types of grasslands found on the Prescott NF: Semi-desert and Great Basin. Grasslands are characterized by less than 10 percent tree cover.

The semi-desert grassland encompasses roughly 126,000 acres at elevations ranging from 3,000 to 4,500 feet. They are bounded by desert communities at the lowest elevations and piñon-juniper woodlands or interior chaparral at higher elevations. Species composition and dominance varies based on soils and topography. The more common grass species include black grama, blue grama, hairy grama, tobosa, and giant sacaton. Various shrubs species also inhabit these grasslands including: creosote bush, catclaw acacia, mimosa, burroweed, broom snakeweed, and mesquite.

The Great Basin grassland encompasses almost 38,500 acres and intermingles with piñon-juniper ecosystems adjacent to the Chino Valley. They are higher in elevation (approximately 4,700 to 7,600 feet) and climatically cooler and moister than semi-desert grasslands. Vegetation consists mostly of grasses and forbs with interspersed shrubs. Grass species may include, but are not limited to, Indian ricegrass, threeawns, blue grama, needle grass, bottlebrush squirreltail, James'

galleta, dropseed, and tobosa grass. Shrub and half-shrub species may include, but are not limited to, saltbush, snakeweed, winterfat, buckwheat, and juniper.

Healthy grasslands are important habitat for a variety of wildlife species and are essential to maintain pronghorn antelope populations. Grasslands of the Prescott NF have undergone dramatic changes over the last 130 years. Changes include encroachment by trees and shrubs, loss of perennial grass cover, loss of cool season plant species, increase in exposed soil surface, and the spread of non-native annual grasses and forbs. Fire plays a key role in the maintenance of grasslands. Fire historically occurred every 10 to 30 years in the Great Basin and 2 to 10 years in the semi-desert.

Currently, the Great Basin grasslands show minimal departure from reference conditions (pre-Euro-American settlement period) in structure and composition; however, without periodic disturbance conditions are expected to trend away from reference conditions. In contrast, the semi-desert grasslands show severe departure from reference conditions in both structure and fire regime.

Under warmer and dryer climate conditions, grassland ecosystems are susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks; colonization of invasive plant species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, and ice storms). Grasses make use of moisture in the upper soil layers. Intense precipitation events may lead to increased run-off, but decreased effective water infiltration. This could decrease vigor of native plants and lead to increased colonization of non-native invasive plant species.

Piñon-Juniper

At roughly 636,800 acres, piñon-juniper communities cover a majority of the Prescott NF landscape and represent one of the most extensive vegetation types in the Southwest. These cold-adapted evergreen woodlands are characterized by piñon and/or juniper species at elevations ranging from 4,500 to 7,500 feet. The piñon component includes Colorado and single leaf species. The juniper component is a variable mix of alligator, one-seed, Utah, and Rocky Mountain. Annual and perennial grasses, forbs, and shrubs can be found beneath the woodland overstory. Species composition, stand structure, and density vary by location primarily due to precipitation, elevation, temperature, and soil type. On erosive soil types within these communities, shrub, tree, and herbaceous ground cover help to lessen raindrop intensity and soil movement.

Under warmer and dryer climate conditions, piñon-juniper communities are expected to be susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks; colonization of invasive species; longer and more severe fire season; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, wind storms, and ice storms). It is possible that there may be some shifts in aerial coverage between the three piñon-juniper PNVTs depending on amount and timing of precipitation and site specific conditions such as terrain and soils. In addition, piñon trees may decrease in number due to possible increased insect attack and lack of moisture.

The piñon-juniper vegetation communities on the Prescott NF have been subdivided into three distinct vegetation types: juniper grassland, evergreen shrub, and woodland. Each is described in more detail in the following sections.

Juniper Grasslands

The juniper grassland type, with a grass and forb-dominated understory and scattered over-story trees, generally occurs on flats, basins, gentle sloping foothills, and transitional valleys at generally lower elevations. The soils associated with juniper grasslands are generally deep and productive. Juniper grasslands cover about 137,300 acres of the Prescott NF.

Current conditions within juniper grasslands are moderately departed from reference conditions. Fire has been excluded from this type for most of the last century, allowing for increases in the age, density, and canopy cover of trees and shrubs, and a reduction in fire-stimulated re-growth and germination of perennial grasses and forbs.

Piñon-Juniper Evergreen Shrub

The evergreen shrub type, with an understory dominated by a mix of shrub species, generally occurs on elevated and lowland plains, hills, and lower-mountain slopes. The soils associated with the evergreen shrub type are variable and include those derived from granite, limestone, basalt, sandstone, and alluvium. Covering more than 463,000 acres, this is the most common piñon-juniper type on the Prescott NF.

Current conditions within the piñon-juniper evergreen shrub type are highly departed from estimates of reference conditions. For example, within-group tree and shrub density is higher than expected, and shrub canopy cover lacks variability. There is a higher proportion of recently disturbed, open-canopy grass-forb-shrub state than expected. This is likely due to management activities during the 1950s-70s that involved “juniper pushes”. Current fire frequency is moderately departed, but fire severity when fires occur, is similar to reference conditions.

Piñon-Juniper Woodlands

Covering about 36,000 acres of the Prescott NF, the woodland type has a persistent tree overstory and a sparse discontinuous understory of some grasses and/or shrubs. It generally occurs on flats, ridge tops, rugged uplands, and steep slopes at various elevations and on soils that are shallow and rocky.

Current vegetative conditions and fire regimes within the piñon-juniper woodlands are similar to reference conditions (i.e. pre-Euro American settlement period). Fire in this vegetation type is less frequent than in the juniper grassland and evergreen shrub types and variable due to differences in ground cover.

Interior Chaparral

Interior chaparral extends over 315,600 acres, and represents the second-largest vegetation type on the Prescott NF. Interior chaparral occurs at mid-elevations (3,400 to 6,600 ft.) on foothills and lower mountain slopes. It is bordered by ponderosa pine or piñon-juniper woodlands at the

upper elevations, and semi-desert grasslands at the lower elevations. Interior chaparral has a uniform dense structure dominated by shrubs with thick, stiff, waxy evergreen leaves. Mixed shrub associations include: shrub live oak, manzanita, desert ceanothus, mountain mahogany, silktassles, Stansbury cliffrose, evergreen oaks, sumacs, and various cacti. Grasses are a minor component in chaparral and may include grama, threeawn, and muttongrass species.

Current interior chaparral composition, structure, and fire regime are similar to reference conditions; however, some non-native invasive species, such as yellow star thistle and Dalmatian toadflax, are infesting portions of the chaparral type (USFS 2005).

Under warmer and dryer climate conditions, interior chaparral ecosystems are susceptible to decreases in plant productivity from water limitations and increased heat; colonization of invasive species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, wind storms, and ice storms).

Ponderosa Pine-Evergreen Oak Forest

Ponderosa Pine - Evergreen Oak forests cover more than 63,500 acres of the Prescott NF at elevations ranging from approximately 6,000 to 7,500 feet. It is dominated by ponderosa pine and can be distinguished from the Ponderosa Pine-Gambel Oak PNVT by one or more well-represented evergreen oak species (e.g., Emory oak and Arizona white oak), juniper species, piñon pine species, and Arizona cypress in some locations. This forest type on the Prescott NF has an understory of primarily evergreen shrubs including manzanita, turbinella oak, sumac species, and mountain mahogany species.

This forest type is currently severely departed from reference conditions. Fuel loads have accumulated on the forest floor. It has too many young and mid-aged trees and shrubs growing closely together. There are not enough old trees. The natural fire regime is severely departed from pre-Euro-American settlement reference conditions. Historically, fire burned relatively frequently (every 6 to 12 years) and at low intensities maintaining an open pine forest with a mix of young evergreen oaks and shrubs underneath. When wildfires occur under current conditions, they are more likely to kill many of the large and old trees, moving the vegetation structure further from reference conditions, thereby increasing the time it would take to restore forest structure to groups of uneven aged, multi-storied stands in the desired conditions for ponderosa pine.

Approximately two thirds of this PNVT occurs within the wildland urban interface⁵.

Under warmer and dryer climate conditions, ponderosa pine-evergreen oak ecosystems are susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks, colonization of invasive species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, wind storms, and ice storms). High risk occurrences could include uncharacteristically intense wildfire, increased rate of insect or disease attack due to warming

⁵ The wildland urban interface includes those areas of resident populations at imminent risk from wildfire, as well as human developments having special significance. These areas encompass not only the sites themselves, but also the continuous slopes and fuels that lead directly to the sites regardless of the distance involved

temperatures, and increasing challenges to regeneration of ponderosa pine, especially on warmer, dryer areas such as south facing slopes.

Ponderosa Pine-Gambel Oak Forest

Ponderosa pine-Gambel oak is a minor vegetation type on the Prescott NF, covering approximately 49,000 acres. This forest type generally occurs at elevations ranging from 5,500 to 9,000 feet on hills, mountain slopes, and some elevated plains. It is dominated by ponderosa pine and Gambel oak and commonly includes other species such as New Mexico locust, juniper, and piñon. Occasionally, species such as aspen, Douglas-fir, and white fir may be present, especially in relatively moist or shady areas. There is typically an understory of grasses and forbs with occasional shrubs.

This forest type is currently severely departed from reference conditions. Fuel loads have accumulated on the forest floor. There are too many young and mid-aged trees and not enough old trees. The natural fire regime is severely departed from the reference conditions found prior to Euro-American settlement. Historically, fire burned relatively frequently (every 1 to 15 years) and at low intensities that kept the forest open with abundant herbaceous cover. When wildfires occur under current conditions, they are more likely to kill many of the large and old trees, moving the vegetation structure further from reference conditions, thereby increasing the time it would take to restore forest structure to groups of uneven aged, multi-storied stands in the desired conditions for ponderosa pine.

Under warmer and dryer climate conditions, ponderosa pine-Gambel oak forest ecosystems are susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks; colonization of invasive species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, wind storms, and ice storms). Similar to the ponderosa pine-evergreen oak PNVT, high risk occurrences could include uncharacteristically intense wildfire due to less moisture, increased rate of insect or disease attack due to warming temperatures, and increasing challenges to regeneration of ponderosa pine following disturbance, especially on warmer dryer areas such as south facing slopes.

Grassland PNVTs

There are two grassland PNVTs classified for the Prescott NF: Semi-Desert and Great Basin. Grassland PNVTs are characterized as having less than 10 percent tree cover.

The Semi-Desert Grassland PNVT encompasses roughly 126,000 acres at elevations ranging from 3,000 to 4,500 feet. These grasslands are bounded by desert communities at the lowest elevations and Piñon-Juniper Woodlands or Interior Chaparral at higher elevations. Species composition and dominance varies based on soils and topography. The more common grass species include black grama, blue grama, hairy grama, tobosa, and giant sacaton. Various shrubs species also inhabit these grasslands including: creosote bush, catclaw acacia, mimosa, burroweed, broom snakeweed, and mesquite.

The Great Basin Grassland PNVT encompasses almost 38,000 acres and intermingles with piñon-juniper ecosystems adjacent to the Chino Valley. This grassland PNVT is higher in elevation (approximately 4,700 to 7,600 feet) and climatically cooler and moister than the Semi-Desert Grassland PNVT. Vegetation consists mostly of grasses and forbs with interspersed shrubs. Grass

species may include, but are not limited to, Indian ricegrass, threeawns, blue grama, needle grass, bottlebrush squirreltail, James' galleta, dropseed, and tobosa grass. Shrub and half-shrub species may include, but are not limited to, saltbush, snakeweed, winterfat, buckwheat, and juniper.

The grasslands PNVTs of the Prescott NF have undergone some dramatic changes over the last 130 years. Changes include encroachment by trees and shrubs, loss of perennial grass cover, loss of cool season plant species, increase in exposed soil surface, and the spread of non-native annual grasses.

Fire plays a key role in the ecological sustainability of grasslands (McPherson, 1995). Fire historically occurred every 10 to 30 years in the Great Basin Grassland PNVT and 2 to 10 years in the Semi-Desert Grassland PNVT. Current fire activity within these grasslands is considerably less often than desired.

A mid-scale assessment of vegetation conditions shows the Semi-Desert Grassland PNVT having a low similarity to desired conditions for vegetation structure. Current conditions are as those described above with encroachment by trees and shrubs, loss of perennial grass cover, and increases in exposed soil surfaces and non-native plant species. The Great Basin Grassland PNVT in contrast, demonstrates a high similarity to desired conditions for vegetation structure and composition, based on a mid-scale assessment. Other field-based vegetation surveys (Forest Service 2009a, Robertson et al., 2000) suggest that species richness (i.e., plant composition) and perennial grass canopy cover within the Great Basin Grassland PNVT are in decline.

Healthy grasslands are important habitat for a variety of wildlife species and are essential to maintaining pronghorn antelope populations. Pronghorn antelope was chosen a Management Indicator Species (MIS) for the grasslands PNVTs because it demonstrates a strong and/or predictable response to proposed management activities including prescribed fire; shrub and tree thinning/removal; road and/or trail maintenance; and watershed or rangeland improvements.

Riparian Gallery Forest PNVT

The Riparian Gallery Forest PNVT occurs along perennial or intermittent streams and around springs and seeps. It covers approximately 12,400 acres and ranges in elevation from 2,000 to 8,000 feet (Forest Service, 2009a). The two major vegetation communities within it are cottonwood-willow and mixed broadleaf deciduous forests. The dominant woody vegetation varies according to elevation, substrate, stream gradient, and depth to groundwater. The juxtaposition of floodplains and stream terraces contribute to the mix of vegetative structures within the PNVT, including narrow stringers of mixed deciduous trees (gallery forest) and willow-, desert willow- or mesquite-dominated shrublands. Common species include Fremont cottonwood, narrowleaf, Gooding, and Bebb willow, Arizona sycamore, velvet and green ash, Arizona alder, Arizona walnut, and box elder. Herbaceous plants include several forbs, sedges, rushes, and grasses. Desert willow, mimosa, rubber rabbitbrush, and mesquite shrubs occur in dewatered areas.

Flooding and time between floods are the driving developmental forces in Riparian Gallery Forest PNVTs. In addition to periodic flooding, American Indians had an influence on vegetation composition and structure by favoring edible plants (e.g., mesquite), collecting fuelwood, and burning to flush animals and increase accessibility to open water and agricultural fields (LANDFIRE, 2007). These influences were likely limited to areas near perennial stream courses,

and not to areas adjacent to either intermittent water or springs and seeps imbedded in the upland vegetation (LANDFIRE, 2007). Outside of possible American Indian influence, wildland fires appear to have been infrequent in riparian communities dominated by cottonwood, willow, and mesquite species prior to invasion by tamarisk (Busch and Smith, 1993).

The Riparian Gallery Forest PNVNT exhibits a high similarity to desired conditions for vegetation structure and fire regime. However, the spread of non-native invasive plant species, soil compaction and loss of vegetation due to visitor use are known threats to the health of this PNVNT.

Forest-wide Current Condition and Trends

Table 7 provides a summary of key findings for PNVNTs from the Prescott NF Ecological Sustainability Report (Forest Service 2009). The current level of departure from reference conditions, and the expected trend towards or away from reference conditions is shown for each PNVNT.

Note that the departure for the semi-desert grassland, piñon-juniper evergreen shrub, and ponderosa pine-dominated PNVNTs are high and trends static over the long-term. The trends are static because high-proportions of each type are not at reference conditions, and there is very little of the vegetation type that would be available to become departed in the future. The piñon-juniper grassland shows a moderate level of departure and conditions over the long-term are expected to improve.

Current conditions for interior chaparral (composition, structure, and fire regime) are similar to reference conditions and are expected to remain similar in the long-term. Prescribed fire and hazardous fuel reduction activities implemented under the existing Plan have contributed to these current conditions. A range of prescribed fire and fuel treatment objectives are evaluated for the proposed alternatives to maintain these desired conditions.

Table 7. PNVNT departure, trend, and disturbance in relation to reference conditions

PNVT Name	Prescott National Forest		Veg Structure	Short-Term (1-20 yrs.)	Long-Term (40-80 yrs.)	Ave. Fire Frequency Years	
	Acres	Percent				Reference	Current
Semi-Desert Grassland	125,712	10%	High	Toward	Static	1:10-15	1:94
Great Basin/CP Grassland	38,389	3%	Low	Static	Away	1:10-30	0
Piñon-Juniper Grassland	137,274	11%	Moderate	Static	Toward	1:1-35	1:714
Piñon-Juniper Evergreen Shrub	463,296	37%	High	Toward	Static	1:35-100	1:233
Interior Chaparral	315,445	25%	Low	Static	Static	1:35-100	1:84

PNVT Name	Prescott National Forest		Veg Structure	Short-Term (1-20 yrs.)	Long-Term (40-80 yrs.)	Ave. Fire Frequency Years	
	Acres	Percent				Reference	Current
Ponderosa Pine-Evergreen Oak	63,539	5%	High	Toward	Static	1:6-12	1:51
Ponderosa Pine-Gambel Oak	49,052	4%	High	Static	Static	1:1-15	1:74
Piñon-Juniper Woodland	36,263	3%	Low	Toward	Toward	1:200+	0
Madrean Encinal Woodland	5,593	<1%	Low	Toward	Toward	1:1-23	0
Desert Communities	5,919	<1%	Low	Static	Static	1:998	1:106
Riparian Gallery/Forest	12,439	1%	Low	No data	No data	1:20-600+	1:76
Total	1,252,950	100%					

Four of the PNVTs (*Piñon-Juniper Woodland*, *Madrean Encinal Woodland*, *Desert Communities*, and *Riparian Gallery/Forest*) have low departure from reference conditions and are expected to remain near reference conditions over the next 40-80 years. There are no fire and vegetation treatment objectives in any of the developed alternatives for these vegetation types, recognizing the limited capacity for treatment during the planning period. This does not prevent treatments from being planned and implemented in these vegetation types as funding and personnel become available. Since there are no objectives developed for these vegetation types, no meaningful comparison of alternatives is possible, and the species associated with these vegetation types will be analyzed less vigorously in this report.

Summary of Terrestrial Ecosystem Conditions

For the terrestrial wildlife habitat, the AMS revealed that the vegetation structure and composition of several PNVTs on the Prescott NF are moderately or highly departed or are trending away from their historic range of conditions. Because these PNVTs are out of sync with their natural fire regimes, restoration efforts need to include modifying the frequency and severity of fire patterns in addition to modifying the structure and composition of the vegetation.

Terrestrial Wildlife Species Habitat

In the ESR, the wildlife species to be considered were associated with particular habitats (PNVTs) and habitat features. For the purposes of this analysis, effects of the alternatives on the respective species to be analyzed are based on the anticipated changes or effects to the associated habitat PNVTs or habitat features listed in Table 8. Some species have been added and some different habitat or feature associations have been changed based on clarification of known uses of habitats and features.

Table 8. Species and habitats assessed for the Prescott NF Plan Revision analysis

Common Name	Scientific Name	Status	PNVT	Habitat feature
Southwestern willow flycatcher (SWWF)	<i>Empidonax traillii extimus</i>	Endangered ⁶	-----	Riparian
SWWF Critical Habitat	-----	Designated	-----	PCE ⁷ (Appendix 1)
Mexican spotted owl (MSO)	<i>Strix occidentalis lucida</i>	Threatened ⁸	PPO	Tree features, riparian
MSO Critical Habitat	-----	Designated	-----	PCE (Appendix 2)
Western yellow-billed cuckoo (YBC)	<i>Coccyzus americanus occidentalis</i>	Candidate ⁹	-----	Riparian
Morafka's desert tortoise	<i>Gopherus morafkai</i>	Candidate, Sensitive ¹⁰	DC	-----
Golden eagle	<i>Aquila chrysaetos canadensis</i>	"Eagle Act" ¹¹	-----	Rock features
Bald eagle	<i>Haliaeetus leucocephalus</i>	"Eagle Act" Sensitive	-----	Riparian, tree features, rock features
Abert's towhee	<i>Pipilo aberti</i>	Sensitive	-----	Riparian vegetation
American peregrine falcon	<i>Falco peregrinus</i>	Sensitive	-----	Rock features: cliffs & ledges for nesting
Common black hawk	<i>Buteogallus anthracinus</i>	Sensitive	-----	Riparian, tree features
Northern Goshawk	<i>Accipiter gentilis</i>	Sensitive, MIS ¹²	PPO, PPE	Tree features
Pale Townsend's big-eared bat	<i>Corynorhinus townsendii pallescens</i>	Sensitive	-----	Rock features: caves & mines
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	Sensitive	-----	Rock features

⁶ Listed Endangered under the ESA: Any species that is in danger of extinction throughout all or a significant portion of its range.

⁷ PCE – Primary constituent elements identified in critical habitat designation

⁸ Listed Threatened under the ESA: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

⁹ Listed Candidate, Ready for Proposal for listing under the ESA.

¹⁰ Those species listed on the Regional Forester's Sensitive Species list for the Southwestern Region of the Forest Service.

¹¹ Species is protected under the Bald and Golden Eagle Protection Act of 1940.

¹² MIS – Management indicator Species

Common Name	Scientific Name	Status	PNVT	Habitat feature
Western red bat	<i>Lasiurus blossevillei</i>	Sensitive	-----	Riparian, tree features, rock features
Plains harvest mouse	<i>Reithrodontomys montanus</i>	Sensitive	SDG, CPGB, JUG, DC	-----
Pronghorn	<i>Antilocapra americana</i>	MIS	SDG, CPGB, JUG	-----

Effects to habitats by PNVT

Habitat descriptions of the desired conditions (DC) and objectives (O) for each vegetation type are taken directly from the proposed LMP. Effects summaries are compiled from the Vegetation and Fire Ecology Specialist report (Forest Service 2011b) as well as vegetation model data (PR Doc # Reference ?). The acres modeled in the Vegetation and Fire Ecology Specialist report reflect the anticipated changes in vegetation from the effects of projected future wildland fire use on the Prescott NF. See the Terrestrial Viability Report (Forest Service 2011d) for the details on changes among the conditions/states/seral stages of the various PNVTs by alternative.

Table 9. Desert Communities PNVT effects summary

	Alternative A	Alternative B	Alternative C	Alternative D
Desert communities - 5,919 acres	<p><u>DC – Veg-22:</u></p> <ul style="list-style-type: none"> The Desert Communities PNVT is comprised of cacti, succulents, trees and shrubs with variable vegetation cover ranging from 1 to 20 percent of the dominate overstory plants. Grass cover is inherently low. Non-native grass species coverage is controlled. Dominant plants include giant saguaro, palo verde trees, cholla and prickly pear cacti, ocotillo, velvet mesquite, catclaw acacia, and jojoba. Natural disturbances are infrequent from drought, frost and wind. Fire is very rare or absent. Damage to vegetation composition, density, and structure from human-caused fires is infrequent and limited in duration and extent. Saguaros, mesquite trees, and other vegetation large enough to sustain cavity nesting birds are present across the landscape. 			
Effects in Desert communities	<p>There are no fire and vegetation treatment objectives in any of the developed alternatives for desert community vegetation types, recognizing the limited capacity for treatment during the planning period. This does not prevent treatments from being planned and implemented in this vegetation type as funding and personnel become available. Since there are no objectives developed for this vegetation type, no meaningful comparison of alternatives is possible.</p>			

Table 10. Ponderosa pine - Gambel oak PNVT effects summary

	Alternative A	Alternative B	Alternative C	Alternative D
Ponderosa Pine/ Gambel Oak 49,052 acres – Existing condition @ 20% of DC	Existing condition: Ponderosa pine-Gambel oak is a minor vegetation type on the Prescott NF, covering approximately 49,000 acres. This forest type generally occurs at elevations ranging from 5,500 to 9,000 feet on hills, mountain slopes, and some elevated plains. It is dominated by ponderosa pine and Gambel oak and commonly includes other species such as New Mexico locust, juniper, and piñon. Occasionally, species such as aspen, Douglas-fir, and white fir may be present, especially in relatively moist or shady areas. There is typically an understory of grasses and forbs with occasional shrubs. This forest type is currently severely departed from reference conditions. Fuel loads have accumulated on the forest floor. There are too many young and mid-aged trees and not enough old trees. The natural fire regime is severely departed from the reference conditions found prior to Euro-American settlement.			
DC – Veg- 17: <ul style="list-style-type: none">At the landscape scale, Ponderosa Pine-Gambel Oak PNVTs are forests having a mosaic of structural stages ranging from young to old trees. Forest structure is variable but generally uneven-aged and open in appearance.The forest arrangement consists of small clumps and groups of trees interspersed within variably-sized openings of grasses, forbs, and shrubs. The size, shape, and number of trees per group and the number of groups per area vary across the landscape. Tree density may be greater in some locations, such as north-facing slopes and steep-sided valleys at higher elevation.Vegetation composition resembles historic situations including ponderosa pine overstory with Gambel oak occupying the lower tree canopy. Aspen or Gambel oak patches occur. There is typically an understory of grasses and forbs with occasional shrubs. Where it naturally occurs, Gambel oak is present with all age classes represented. It is reproducing to maintain or expand its presence on suitable sites across the landscape.A variety of snag species and coarse woody debris are well distributed throughout the landscape. Snags are typically 18 inches or greater DBH and average 1 to 2 per acre. Logs (greater than 12-inch diameter at mid-point and greater than 8 feet long) average 3 per acre within the forested area of the landscape. Coarse woody debris, including logs, ranges from 3 to 10 tons per acre.Grasses, forbs, shrubs, needle cast (fine fuels), and small trees support the natural fire regime. The greater proportion of ground cover is composed of grasses and forbs as opposed to needle cast.Frequent, low severity fires, occurring every 1 to 15 years, are characteristic of this forest including throughout the range of northern goshawks and Mexican spotted owls.				
O - 5: Thin/harvest and introduce or allow wildland fire (planned and unplanned ignitions) in ponderosa pine-Gambel oak and ponderosa pine-evergreen oak PNVTs during the 10 years following plan approval.				
Timber Harvest	5,600 acres	2,500 – 8,000 acres		
Prescribed Fire	24,300 acres	25,000 – 50,000 acres	30,000 – 65,000 acres	25,000 – 50,000 acres

	Alternative A	Alternative B	Alternative C	Alternative D
Effects in PPO	<p>For all of the alternatives, the differences in effects of moving toward desired conditions are not discernible among the alternatives. There is overlap in the ranges for the alternatives. All of the alternatives move the PPO toward desired conditions. The process is slow due to the longevity of the primary species, ponderosa pine. Approaching 34 percent resemblance of desired conditions would include increased proportion of large over-story or old trees within the PNVT. Reducing the closed canopy states from about 90 percent of the PPO to 77 percent of the PPO across the alternatives in the first 20 years would reduce the total number of trees across the landscape and increase grasses, forbs and shrubs in the understory.</p> <p>The vegetative conditions within the ponderosa pine PNVTs will shift from the existing closed canopy conditions toward desired more open canopy conditions. The largest shift is the increase in seedling/sapling stage. The second most considerable change in vegetative conditions is the increase in open canopied areas with medium/large trees. The relative amounts of medium/large trees with a closed canopy, while considerably out of proportion to desired amounts, only decrease by a small proportion within 40 years of implementing the plan due to the longevity of ponderosa pine trees and their slow response to treatments.</p>			

Table 11. Ponderosa pine - evergreen oak PNVT effects summary

	Alternative A	Alternative B	Alternative C	Alternative D
Ponderosa Pine/ Evergreen Oak 63,539 acres – Existing condition @ 17% of DC	<p>Existing condition: Ponderosa Pine - Evergreen Oak forests cover more than 63,500 acres of the Prescott NF at elevations ranging from approximately 6,000 to 7,500 feet. It is dominated by ponderosa pine and can be distinguished from the Ponderosa Pine-Gambel Oak PNVT by one or more well-represented evergreen oak species (e.g., Emory oak and Arizona white oak), juniper species, piñon pine species, and Arizona cypress in some locations. This forest type on the Prescott NF has an understory of primarily evergreen shrubs including manzanita, turbinella oak, sumac species, and mountain mahogany species. This forest type is currently severely departed from reference conditions. Fuel loads have accumulated on the forest floor. It has too many young and mid-aged trees and shrubs growing closely together. There are not enough old trees. The natural fire regime is severely departed from pre-EuroAmerican settlement reference conditions.</p>			

	Alternative A	Alternative B	Alternative C	Alternative D
<p>DC – Veg- 13:</p> <ul style="list-style-type: none"> At the landscape scale, Ponderosa Pine-Evergreen Oak PNVTs are forests having a mosaic of structural stages ranging from young to old trees. Forest structure is variable but generally uneven-aged and open in appearance. The forest arrangement consists of small clumps and groups of trees interspersed within variably-sized openings of moderate to high density shrubs and limited grass cover. The size, shape, and number of trees per group and the number of groups per area vary across the landscape. Tree density may be greater in some locations, such as north-facing slopes and canyon bottoms. Vegetation composition resembles historic situations including ponderosa pine overstory. Evergreen oaks are well represented and juniper, piñon pine and Arizona cypress can be found in the lower tree canopy. Understory species consist of evergreen shrubs (manzanita, turbinella oak, sumac species, mountain mahogany species) and grass as scattered ground cover. Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, snags, coarse woody debris (downed wood), and structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality). The forest contains various stages of development (e.g., temporary openings or groups of very young trees) to provide future old growth within the landscape. The ponderosa pine-evergreen oak forest is composed predominantly of vigorous trees and shrubs, but declining, top-killed, lightning-scarred, and fire-scarred trees provide snags and coarse woody debris (greater than 3 inch diameter). A variety of snag species and coarse woody debris are well distributed throughout the landscape. Snags are typically 18 inches or greater diameter at breast height (DBH) and average 1 to 2 per acre. Logs (greater than 12 inch diameter at mid-point and greater than 8 feet long) average 3 per acre within the forested area of the landscape. Coarse woody debris, including logs, ranges from 3 to 10 tons per acre. Where it naturally occurs, Emory oak and Arizona white oak are present with all age classes represented. Old trees occur as dominant individuals or small groups in openings. Limited grasses, forbs, and a moderate density of shrubs, and needle cast (fine fuels), support the natural fire regime. Fires of low severity and occasionally mixed severity, occurring every 6 to 12 years, are characteristic of this PNVt including throughout the range of northern goshawks. 				
<p>O - 5: Thin/harvest and introduce or allow fire in ponderosa pine-Gambel oak and ponderosa pine-evergreen oak PNVTs during the 10 years following plan approval.</p> <p>(same # acres shown above – not distinguished between PNVTs)</p>				
Timber Harvest	5,600 acres	2,500 – 8,000 acres		
Prescribed Fire	24,300 acres	25,000 – 50,000 acres	30,000 – 65,000 acres	25,000 – 50,000 acres
Effects in PPE	<p>The vegetative conditions within the ponderosa pine PNVTs will shift from the existing closed canopy conditions toward desired more open canopy conditions. The largest shift is the increase in seedling/sapling stage. The second most considerable change in vegetative conditions is the increase in open canopied areas with medium/large trees. The relative amounts of medium/large trees with a closed canopy, while considerably out of proportion to desired amounts, only decrease by a small proportion within 40 years of implementing the plan due to the longevity of ponderosa pine trees and their slow response to treatments.</p>			

Table 12. Semi-desert grassland PNVT effects summary

	Alternative A	Alternative B	Alternative C	Alternative D
Semi-desert grassland – 125,712 acres Existing condition @ 31% of DC	Existing condition: The semi-desert grassland encompasses roughly 126,000 acres at elevations ranging from 3,000 to 4,500 feet. The semi-desert grasslands show severe departure from reference conditions in both structure and fire regime. Grasslands of the Prescott NF have undergone dramatic changes over the last 130 years. Changes include encroachment by trees and shrubs, loss of perennial grass cover, loss of cool season plant species, increase in exposed soil surface, and the spread of non-native annual grasses and forbs.			
<u>DC – Veg-21:</u> <ul style="list-style-type: none">• Within Semi-Desert Grassland PNVT, perennial herbaceous species dominate and include native grasses, grass-like plants (sedges and rushes), and forbs and, where appropriate, a diversity of shrubs. Woody (tree and shrub) canopy cover is less than 10 percent. Grass communities consist of a diverse mix of cool and warm season species.• Composition, structure, and cover provide habitat for native animals associated with grasslands, especially pronghorn antelope, ferruginous and Swainson’s hawks, western burrowing owls, and western grasshopper sparrows.• On average, fine fuels provide for and maintain the desired fire regime. The desired fire return interval for the Semi-Desert Grassland PNVT is approximately every 10 to 15 years.				
<u>O - 1:</u> Allow or introduce wildland fire (planned and unplanned ignitions) during the 10 years following Plan approval.				
Prescribed Fire	13,300 acres	25,000 - 65,000 acres	65,000 – 85,000 acres	25,000 - 65,000 acres
Effects in SDG: DC of open states – 80%	Alt A moves this vegetation type to just 23-35% open states within 20 years.	Within 20 years, this alternative moves the SDG to 30-84% open states.	Within 20 years, this alternative moves the SDG to 44-86% open states.	Within 20 years, this alternative moves the SDG to 30-84% open states.

Table 13. Great Basin grassland PNVT effects summary

	Alternative A	Alternative B	Alternative C	Alternative D
Great Basin – 38,389 acres Existing condition @ 83% of DC	Existing condition: The Great Basin grassland encompasses almost 38,500 acres and intermingles with piñon-juniper ecosystems adjacent to the Chino Valley. They are higher in elevation (approximately 4,700 to 7,600 feet) and climatically cooler and moister than semi-desert grasslands. Vegetation consists mostly of grasses and forbs with interspersed shrubs. Grass species may include, but are not limited to, Indian ricegrass, threeawns, blue grama, needle grass, bottlebrush squirreltail, James’ galleta, dropseed, and tobosa grass. Shrub and half-shrub species may include, but are not limited to, saltbush, snakeweed, winterfat, buckwheat, and juniper. Currently, the Great Basin grasslands show minimal departure from reference conditions (pre-Euro-American settlement period) in structure and composition; however, without periodic disturbance conditions are expected to trend away from reference conditions.			
DC – Veg-21: <ul style="list-style-type: none">• Within Great Basin Grassland PNVT, perennial herbaceous species dominate and include native grasses, grass-like plants (sedges and rushes), and forbs and, where appropriate, a diversity of shrubs. Woody (tree and shrub) canopy cover is less than 10 percent. Grass communities consist of a diverse mix of cool and warm season species.• Composition, structure, and cover provide habitat for native animals associated with grasslands, especially pronghorn antelope, ferruginous and Swainson’s hawks, western burrowing owls, and western grasshopper sparrows.• On average, fine fuels provide for and maintain the desired fire regime. The desired fire return interval for the Great Basin Grassland PNVT is approximately every 10 to 30 years.				
O - 2: Allow or introduce wildland fire (planned and unplanned ignitions) during the 10 years following Plan approval.				
Prescribed Fire	400 acres	1,000 – 5,000 acres	5,000 – 10,000 acres	1,000 – 5,000 acres
Effects in CPDG: DC of open states – 93%	Alt A moves this vegetation type to 86-93% open states within 20 years.	Within 20 years, these alternatives move the CPDG to 86-95% open states.		

Table 14. Juniper grassland PNVT effects summary

PNVT	Alternative A	Alternative B	Alternative C	Alternative D
Juniper Grassland (JUG) – 137,274 acres -Existing condition @ 55% of DC	<p>Existing condition: The juniper grassland type, with a grass and forb-dominated understory and scattered overstory trees, generally occurs on flats, basins, gentle sloping foothills, and transitional valleys at generally lower elevations. The soils associated with juniper grasslands are generally deep and productive. Juniper grasslands cover about 137,300 acres of the Prescott NF.</p> <p>Current conditions within juniper grasslands are moderately departed from reference conditions. Fire has been excluded from this type for most of the last century, allowing for increases in the age, density, and canopy cover of trees and shrubs, and a reduction in fire-stimulated re-growth and germination of perennial grasses and forbs.</p>			

PNVT	Alternative A	Alternative B	Alternative C	Alternative D
DC – Veg-6: <ul style="list-style-type: none">Juniper Grassland PNVTs are generally uneven-aged and open in appearance. Trees occur as individuals or in smaller groups and range from young to old. One or more juniper species are always present while piñon species are usually absent.Tree canopy cover may range from a low of 5 to 10 percent to as high as 30 percent. A continuous herbaceous understory, including native grasses and forbs, are present, with incidental occurrence of shrubs that support a natural fire regime.Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, snags, coarse woody debris (downed wood), and structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality).Snags are scattered across the landscape. Coarse woody debris occurrence, including logs, generally averages 1 to 2 tons per acre.Fires occur every 1 to 35 years with low severity favoring re-growth and germination of native grasses and forbs.				
O - 3: Treat in Juniper Grasslands, Piñon-Juniper Evergreen Shrub, and Piñon-Juniper Woodlands PNVTs using mechanical treatments, wildland fire (planned and unplanned ignitions), or browsing by domestic livestock to improve watershed and rangeland conditions, vegetation structure, and wildlife habitat during the 10 years following Plan approval.				
Mechanical	3,100 acres	20,000 – 90,000 acres of treatments	20,000 – 40,000 acres of treatments	
Prescribed Fire	25,000 acres			
Effects in JUG	For all of the alternatives, the differences in effects of moving toward desired conditions are not discernible among the alternatives. There is overlap in the ranges for the alternatives. All of the alternatives move the JUG toward desired conditions changing just 11 percent to reach 66 percent of desired conditions at 20 years. Within 20 years after implementing the forest plan, there are two noticeable changes across the landscape; the proposed objectives shift conditions by increasing total acres of medium/large trees with open canopy and reducing the total acres with seed/sapling/small trees with an open canopy. After 40 years, only the medium/large trees with an open canopy are most consistently approaching desired conditions within the PNVT.			

Primary impacts for habitat features identified in the Ecological Sustainability Report (PNF 2009).

Table 15. Riparian habitat features effects summary

Primary impacts to species associated with Riparian habitat features: Groundwater depletion and stream flow diversions (occurring off-PNF), roads, trails, facilities, non-native plant species and upland species encroachment, uncharacteristic fire in riparian and adjacent areas, mining and dredging, and unmanaged herbivory leads to loss or damage to riparian characteristics. Disturbance to soils in these areas due to unmanaged herbivory, dispersed camping, or construction activities can decrease plant numbers.		
	Alternative A	Alternatives B, C, & D
O-16 Protect, relocate, or rehabilitate 2 to 5 recreation areas or locations (including trails) that show evidence of resource damage during the 10 years following Plan approval.	2 to 5 areas	
Objectives for Watershed Integrity within Riparian habitat		
O-18 Implement distinct projects that improve watershed conditions within high priority watersheds during the 10 years following Plan approval.	8 to 12 projects	20 to 50 projects
O-19 – Within 1 to 5 years of detection, improve 10 to 40 percent of improperly functioning or at-risk riparian areas during the 10 years following Plan approval.	10 acres and 17 segments improved	10 to 40 % of identified areas
O-20 – Maintain, repair, or relocate 20 to 100 miles of National Forest System roads or trails that impact watershed integrity during the 10 years following Plan approval.	30 miles	20 to 100 miles

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O-21 – Obliterate, re-contour, or re-vegetate a minimum of 10 miles of unauthorized routes that are impacting watershed integrity during the 10 years following Plan approval.	23 miles	Minimum 10 miles
O-22 – Improve 15 to 25 stream or drainage crossings associated with roads or trails to facilitate flow and sediment transport during the 10 years following Plan approval.	2 crossings	15 to 25 crossings
O-23 – Maintain or enhance 25 to 55 ground water dependent ecosystem sites (e.g., seeps and springs) during the 10 years following Plan approval.	12 sites	25 to 55 sites
Objectives for Aquatic and Terrestrial Wildlife habitat within Riparian habitat		
O-24 - Restore native fish species to 2 to 3 stream reaches during the 10 years following Plan approval.	76 acres of tamarisk treatment along Verde W/S/ River	Alts B & D: 2 to 3 stream reaches Alt C: 4 to 6 stream reaches
Riparian habitat effects	The existing FP has two riparian guidelines: One gives riparian resources preference over other resources and the other calls for maintaining satisfactory conditions or improving riparian areas. The least potential for improvement to riparian associated habitat is through Alternative A.	Alternatives B, C, and D have the greatest potential to improve watershed resources and the associated riparian habitat. There are no measurable differences among alternatives B, C, and D and goals for watershed integrity. All of these alternatives include Guide-WS-3 (see table 4) which would ensure that riparian areas are at least maintained in their existing condition if not improved by any projects that may impact these habitat features. Implementing these objectives would likely improve riparian vegetation habitat features for all wildlife species.

Riparian features: Specific aspects or features of riparian habitat were not identified in the ESR. For the purposes of this report, the focus of the assessment will be on the “terrestrial” aspect of riparian habitat features, the vegetation associated with riparian habitats. The existing condition of the riparian habitat on the Prescott NF is a “low” departure from reference conditions; or, to state that another way, it closely resembles reference or historic conditions. There are no proposed objectives (treatments/management actions/projects) specifically for riparian habitats in any of the alternatives.

All alternatives include a desired condition relevant to riparian habitat in DC-Watershed-2 and DC-Aquatic-1. For watershed integrity, Alternatives B-D include 7 different objectives (Obj-18-24) that would improve the riparian habitats associated with the site specific projects.

For riparian habitat elements, both the existing forest plan (ALT A) on pages 30-31 and 35, and the proposed revision (ALTs B-D) in Guides-WS-3-10, Guide-Wildland Fire-8, Guide-Locatable minerals-1 and 2, Guide-Mineral materials-1, Std-Range-2, Guide-Range-1 and 5, include guidelines and/or standards providing for the protection and management of riparian habitat including the riparian vegetation.

All of these Watershed projects are proposed for the objective of improving watershed integrity. While implementing any of these projects may have localized, short term impacts including displacement of animals or changing of current riparian vegetation habitat features, these projects would all be designed with the long term objective and intent of improving riparian vegetation habitat quality as either a means or a result of improving watershed integrity.

For the vegetation, recreation, and wildlife habitat objectives, all of the relevant desired conditions and guidelines for riparian features would be applied in project design and implementation, thus protecting and providing these riparian habitat features.

Table 16. Tree features effects summary

Tree features	Primary impacts: Fires can consume tree features directly resulting in the loss of nesting, breeding and roosting habitat. Smoke from fire can displace individuals and cause direct mortality. Trampling can cause mortality to individuals occupying leaf litter. Timber harvest activities may result in direct damage/loss of trees/snags.
Tree features habitat	Tree features: Different types of tree features identified in the ESR include cavities, snags, leaves, bark, and downed logs. Tree features of one kind or another can be found in practically every PNVT. The primary threats to these features vary by PNVT, type of feature, and the nature of activities proposed within these PNVTs. Most of these tree features are associated with decadence within the system. The various types of tree features are mentioned in the desired conditions for all of the forested PNVTs and riparian gallery forests (DC-Veg-6, 7, 9, 13, 17, and 23) and watershed integrity (DC-Watershed-3). In ALTs B-D, guidelines for tree features occur in soils (Guide-Soils-2) and wildlife (Guide-WL-4 and 5). For snag habitat elements, both the existing forest plan (ALT A) in Appendices F, G, and H, and the proposed revision (ALTs B-D) in Guide-WL-4 include guidelines providing for the protection and management of snag habitat elements. There are no proposed objectives (treatments/management actions/projects) relevant to these habitat features in any of the alternatives. Objectives 3 and 5 involve both timber harvest activities as well as prescribed fire activities to manage vegetation conditions within forested habitat PNVTs. While timber harvest may increase the amount of down woody material, prescribed fire has the potential to reduce this habitat feature. With snags and downed logs included in the desired conditions for all forested PNVTs, these features should be incorporated into the project designs and should continue to be present at appropriate levels across the landscape after project implementation.

Table 17. Rock features effects summary

Rock features (caves, cliffs, ledges canyons,)	Primary impacts: Activities including recreational rock climbing, caving, mining, construction and vandalism can disturb or damage habitat. Removal of surface rock causes direct mortality and damages habitat. Alterations of the rock surfaces such as removal of rock through excavation or rock climbing can alter the habitat enough to prevent plant establishment and displace animals using the rock habitat. Where the types of human activity in or on these features are regulated through some sort of permit defining appropriate operating parameters for the activity relevant to the purpose and the resources of concern, site specific resource and wildlife species needs are addressed. There are no proposed objectives (treatments/management actions/projects) relevant to these habitat features in any of the alternatives.	
	Alternative A	Alternatives B, C, & D
Rock feature habitat	<p>The existing FP, Alt. A, has a guideline to “Maintain or improve habitat for threatened or endangered species...”</p> <p>There is also FSM direction for sensitive species management. This direction will provide a certain level of protection for these status species and their habitats.</p>	<p>Guidelines (WL-1 and 2) for federal and sensitive species would include developing breeding season timing restrictions and other project design features to alleviate impacts from disturbance from resource management and recreational activities. Wildlife Guidelines 5 and 6 specifically address managing rock features to meet wildlife habitat needs and requirements. Guidelines in Minerals (Locatable-2 and Materials-6) would provide for protecting sensitive species and their rock feature habitats from impacts from mineral actions.</p>

Affected environments

Federal species

Southwestern willow flycatcher (*Empidonax traillii extimus*) and critical habitat:

Occupied sites for southwestern willow flycatcher in Arizona are located along permanent water courses, including the San Pedro, Salt, Gila, and Verde Rivers, Alamo Lake, and Tonto Creek (AGFD 2008a). The southwestern willow flycatcher is historically known to occur along the Verde River, however, no occurrences of this specific sub-species have been reported on Prescott NF lands. Several observations of other willow flycatchers were reported in 1997 on the Verde Ranger District in the vicinity of the Verde River and Black Canyon, and sites monitored along the Verde River have also reported occurrences adjacent to the Prescott NF in Camp Verde (AGFD 2008a).

Southwestern willow flycatcher habitat requirements include riparian vegetation with dense foliage from ground level to 13 feet in thickets of trees and shrubs interspersed with small openings. It breeds in dense shrub and tree-dominated riparian habitats along streams or other wetlands. Slow-moving or still surface water is very common, and saturated soils are present at or near breeding sites during non-drought years (FWS 2002).

Threats include the loss or alteration of habitat due to damming, water diversion, groundwater pumping, vegetation removal, livestock grazing, recreation, and wildfire. Non-native species negatively impact habitats, however tamarisk also provide a benefit as they are used for nesting. Nest predation by brown-headed cowbirds can also be a significant contributor to population decline (FWS 2002).

The extent of the southwestern willow flycatcher range on the Prescott NF is thought to be within the current designated critical habitat along the Verde River. Designated critical habitat for the southwestern willow flycatcher occurs along 31.8 miles of the Verde River. Much of this habitat occurs on non-Forest Service land; the Prescott NF portion encompasses 1,339 acres along 9.4 miles of the Verde River.

Mexican spotted owl (*Strix occidentalis lucida*) and critical habitat

Known Mexican spotted owl locations are distributed from southern Utah and central Colorado, south through the mountains of Arizona, New Mexico, and western Texas, into northern Mexico (FWS 1995). Known nesting sites on the Prescott NF include areas near Mingus Mountain, in Prescott Basin, and at Crown King for a total of 15 Protected Activity Centers (PACs).

Mexican spotted owls are known to occur on the Bradshaw and Verde Ranger Districts of the Prescott NF. They are found in forests of ponderosa pine/Gambel oak with large trees, dense overstory, and woody debris including snags and downed logs. Existing habitat on the Prescott NF totals 26,448 acres.

There are three Mexican spotted owl critical habitat areas associated with the Prescott NF. A small portion of UGM-13 (Upper Gila Mountain) lies across the boundary between the Prescott NF and the neighboring Kaibab NF in Sycamore Canyon Wilderness. None of the acres in that critical habitat area are restricted or protected habitat. BR-W-2 (Basin & Range- West) is on the Bradshaw Ranger District in the Prescott Basin. BR-W-3 is on the Bradshaw Ranger District near Crown King. Per the Federal Register designating critical habitat, "WUI project areas, State and private lands are not designated as critical habitat" (FWS 2004). For the BR-W-2 polygon, the Boundary WUI project area is exempt from designation. For the BR-W-3 polygon, the Crown King/Ash Creek WUI project area is exempt from designation. The total area of National Forest System lands within Critical Habitat polygons on the

Prescott NF is 44,814 acres. Within designated critical habitat on the Prescott NF, the total area of protected habitat is 4,058 acres, and the total area of restricted habitat is 6,231 acres.

In the two main critical habitat polygons on the Prescott NF located in the BR-W Recovery Unit, the primary threat to MSO is the potential for catastrophic wildfire (FWS 1995). Other key threats include recreation and grazing. The MSO critical habitat within the UGM Recovery Unit is predominantly canyon habitat and thus not susceptible to the primary threats of catastrophic fire and even-aged timber harvest.

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)

Western yellow-billed cuckoo is associated with riparian habitat features, and is most closely associated with understory riparian vegetation. Most reported occurrences in Arizona come from riparian habitats containing a variable combination of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk (Corman & Wise-Gervais 2005).

Between 2001 to 2003, a total of 13 observations were reported for the Prescott NF, most from along the Verde River and upper Aqua Fria drainage. Current status of breeding on Prescott NF lands is unknown, but no nesting was reported from monitored sites.

Habitat availability for this species on Prescott NF lands is approximately 7,496 acres. Habitat loss has been attributed to water diversion and impoundment, channelization, livestock grazing, off-road vehicle and other recreation uses, as well as increase in non-native plant species (FWS 2010b).

Morafka's desert tortoise (*Gopherus morafkai* (Sonoran POP))

Within the United States, the range of the Morafka's desert tortoise is limited entirely to Arizona. Distribution in Arizona occurs south and east of the Colorado River and is largely defined to the north by the limits of the Sonoran Desert (FWS 2010a). Desert tortoise occurrence on the Prescott NF is known from the south end of the Bradshaw Ranger District near the towns of Cleator and Mayer.

This species is most closely associated with low-density shrub vegetation types of the Sonoran and Mojave deserts. Habitat commonly consists of rocky, steep slopes and bajadas as well as palo verde-mixed cacti plant associations. Availability of shelter burrow habitat is important as tortoises require loose soil to excavate burrows below rocks and boulders, but also use rock crevices and occasionally burrow under vegetation. Habitat on the Prescott NF is limited to the Desert Communities PNV (5,919 acres) which shows low levels of departure from desired conditions.

A number of habitat-related risk factors are identified for this species. Invasion of non-native plants leading to a change in frequency, duration, intensity, and magnitude of wildfires in desert habitats is described as the most significant habitat modification factor. Off-highway vehicles in desert tortoise habitat can result in damage to soil, increased erosion, and lead to spread of invasive species. Livestock grazing has the potential to damage lower-elevation tortoise burrows (FWS 2010a). There are no fire or vegetation treatments (i.e. plan objectives) proposed for this PNV in any of the alternatives.

Sensitive species

Abert's towhee (*Pipilo aberti*)

Abert's towhee are associated with understory riparian vegetation, and confirmed breeding areas on the Prescott NF appear around the Verde River and Aqua Fria River (Corman & Wise-Gervais 2005). Favored breeding habitat consists of cottonwood-willow with a dense shrub understory or mesquite

woodland; they are also reported as having adapted to nesting within stands of tamarisk (Corman & Wise-Gervais 2005). Nesting usually occurs low in trees or shrubs near watercourses (Tweit & Finch 1994).

The current availability of habitat, consisting of denser shrub and stands of multi-storied trees within Riparian Gallery/Forest vegetation, is estimated at 8,745 acres. From 1992 through 2003 a total of five occurrences are reported for the Prescott NF, with one additional occurrence reported in 2009 (Birek et al. 2010).

The loss or modification of native bottomland riparian habitat is described as the current main threat to this species (NatureServe 2010); it is also vulnerable to nest predation by brown-headed cowbirds (Corman & Wise-Gervais 2005).

Bald eagle (*Haliaeetus leucocephalus*)

Bald eagle is associated with riparian habitat, as well as rock and tree features. Wintering populations occur in both central and northern Arizona (AGFD 2010), and breeding sites are distributed mostly along major rivers in the central portion of the state (SWBEMC 2010). Known breeding occurrences for the Prescott NF include three monitored nest sites located at Lynx Lake and along the Verde River, with confirmed fledging of at least one young each year from 2002-2009. One winter roost site is also known to occur on the Prescott NF near Goldwater Lake.

Nesting in Arizona typically occurs on cliff faces, pinnacles, and ledges, generally within 600 feet of water or in pine habitats within one mile of larger water bodies. Nesting habitat for the bald eagle includes 2,780 acres of overstory riparian along the Verde River, 426 acres of cliff habitat along the Verde River, and approximately 100 acres of ponderosa pine forest adjacent to Lynx Lake. Winter roost habitat includes about 50 acres adjacent to Goldwater Lake. The total acres of bald eagle habitat on the Prescott NF is approximately 3,356 acres.

Human disturbance can lead to nest failure. Power line electrocution, and automobile collisions associated with feeding on road kill are potential mortality factors (FWS 1999b).

Common black-hawk (*Buteogallus anthracinus*)

The distribution of the common black-hawk in Arizona occurs along remote streams draining the Mogollon Rim, Big Sandy, Virgin River, and upper Gila River drainages (AGFD 2005d). It is associated with riparian habitat features and is dependent on mature, relatively undisturbed habitat supported by permanent flowing water (AGFD 2005d).

Mature gallery forests at lower elevations are the primary location for nesting (Schnell 1994), with occurrence sparse in higher elevation canyon drainages containing scattered Arizona sycamore and Arizona alder among ponderosa pine and Douglas-fir (Corman & Wise-Gervais 2005).

Representative breeding habitats modeled for this analysis included Riparian Gallery/Forest PNVTs with medium/large trees. Existing modeled habitat totals 4,248 acres on Prescott NF lands, and breeding has been reported in the southwestern portion of the Verde Ranger District, and adjacent to the Forest along the Verde River.

Alteration and elimination of riparian habitat through clearing, water diversion, dikes and damming, and lowering of water table by underground pumping (AGFD 2005), and livestock grazing, which reduces regenerating seedlings (Schnell 1994). This species is vulnerable to nesting disturbance (AGFD 2005d).

Western red bat (*Lasiurus blossevillii*)

Western red bat is associated with broad-leaf deciduous riparian forests and other wooded areas, which comprise roosting habitat as well. It is usually solitary, roosting primarily in the foliage of trees or shrubs (WBWG 2005); they have also been known to “roost” in the leaf litter in the riparian zone.

Arizona locations are scattered throughout the state, but absent from the desert areas (Hoffmeister 1986), with elevations ranging from 1,900 to 7,200 feet (AGFD 2003b). One occurrence, near the Verde River, was reported in 1994 (AGFD 1995b) and several other occurrences were reported within Yavapai County, east of the Prescott NF (HDMS 2011). Modeling indicates approximately 4,248 acres of existing habitat on the Prescott NF.

Threats include loss of dense, mature cottonwood forest is a factor in declining abundance (AGFD 2003c). Intensive use of pesticides in fruit orchards may pose a threat to individuals and may reduce available prey. Controlled burns have the potential to cause mortality of bats roosting in leaf litter during periods of cooler temperatures (WBWG 2005).

American peregrine falcon (*Falco peregrinus*)

The peregrine falcon breeds in western North America. Most breeding in Arizona occurs on the Mogollon Rim, Grand Canyon, and Colorado Plateau (AGFD 2002b). Known breeding is reported for the Prescott NF. Two nest sites near Thumb Butte and Granite Mountain on the Bradshaw Ranger District are monitored on-Forest; the last confirmed fledging of young occurred in 2006.

Suitable habitat in Arizona for American peregrine falcon consists of steep, sheer cliffs and ledges to caves and mines. Suitable habitats for the Prescott NF were derived by modeling slope associated with digital elevation models, with slopes greater than 65 percent selected to represent cliffs and ledges. Approximately 8,829 acres of cliffs and ledges habitat are estimated for the Prescott NF.

Pale Townsend’s big-eared bat (*Corynorhinus townsendii pallescens*)

The geographic range for pale Townsend’s big-eared bat extends from southern California, east to western Texas, and south to northern Mexico. In Arizona, the species is widespread (AGFD 2003b). This species appears to be relatively common at suitable roosting sites on the Prescott NF. Abandoned mines used by Townsend’s big-eared bats occur on all three Ranger Districts with the majority of them on the Bradshaw RD.

Suitable habitat in Arizona for Townsend’s big-eared bats consists of steep, sheer cliffs and ledges to caves and mines. Suitable habitats for the Prescott NF were derived by modeling slope associated with digital elevation models, with slopes greater than 65 percent selected to represent cliffs and ledges. Approximately 8,829 acres of cliffs and ledges habitat are estimated for the Prescott NF. The extent of potential habitat associated with mine features was not modeled due to the extreme variability of the quality of habitat found in mine features.

Pocketed free-tailed bat (*Nyctinomops femorosaccus*)

Similar to the pale Townsend’s big-eared bat, the geographic range for pocketed free-tailed bat extends from southern California to west Texas, and south into Baja and central Mexico. In Arizona, the species occurs in the southern half of the state. Hoffmeister (1986) describes the northern limit of this species as the Bill Williams River and near Roosevelt Lake. No occurrences are reported for the Prescott NF. Bat surveys conducted on Forest in 1992-1993 and 1995 did not record this species (AGFD 1995b). Only one sighting is reported for Yavapai County (east of the Verde River). The nearest known observation, dated

1993, is located about seven miles east of the Verde Ranger District (Heritage Data Management System 2011?).

Suitable habitat in Arizona for Pocketed free-tailed bat consists of steep, sheer cliffs and ledges to caves and mines. Suitable habitats for the Prescott NF were derived by modeling slope associated with digital elevation models, with slopes greater than 65 percent selected to represent cliffs and ledges. Approximately 8,829 acres of cliffs and ledges habitat are estimated for the Prescott NF.

Northern goshawk (*Accipiter gentilis*)

In North America, goshawks breed throughout most forested areas, from Alaska, east to eastern Canada, south to New England, and southern New Mexico and northern Mexico (NatureServe 2010). In Arizona, goshawks are found in high, forested mountains and plateaus statewide, usually above 6,000 feet elevation (AGFD 2003a). On the Prescott NF, six to eight sites were monitored from 2002-2005, with nine post-fledging family areas (PFAs) monitored in 2009. Successful fledging at monitored sites has been low.

Goshawks are known to occur on all three of the Ranger Districts of the Prescott NF including areas near Mingus Mountain, Camp Wood, Prescott Basin, and Crown King. The northern goshawk is associated with the ponderosa pine PNVTs and tree features for every aspect of its life history from nesting, to roosting, to foraging. Northern goshawk nesting habitat consists of mature and old growth forest stands with relatively high canopy closure. Foraging habitat for the northern goshawk would primarily consist of early, more open seral stages that provide habitat for key prey species including small mammals and passerine birds. Existing nesting habitat for this species is estimated at 50,489 acres, consisting of ponderosa pine stands with medium and large trees with open and closed canopies. Existing foraging habitat for the northern goshawk would be the 3,522 acres of seedling/sapling and small trees with open canopy in the two ponderosa pine PNVTs.

Plains harvest mouse (*Reithrodontomys montanus*)

Plains harvest mouse is distributed from southeastern Wyoming and southwestern South Dakota, southward into Texas and northern Mexico (IUCN 2011). In Arizona, records occur for the southeastern portion of the state, but also for Yavapai County (Arizona Game and Fish Department 2010c/No HDMS species distribution map for PHM?). Specimens examined by Hoffmeister (1986) in Yavapai County were located near Chino Valley, Camp Verde, and Skull Valley. Plains harvest mouse has not been documented on the Prescott NF.

Habitats for the plains harvest mouse vary from desert scrub, chaparral, xeric conditions, mesquite (Hoffmeister) to well-developed short-grass prairies including cultivated agricultural areas (Linzey 2008).

Management Indicator species

Pronghorn (*Antilocapra americana*)

Distribution for the pronghorn is from Southeastern Washington, west to western North Dakota, south through Nevada and eastern Colorado to northern Mexico (O’Gara 1978). In Arizona, they are found in the north-central portion of the state, with small herds scattered also in the southeast (AGFD 2009). This species is described as common on the Prescott NF

Habitats - Herds in north-central Arizona are found in a variety of grassland habitats, ranging from desert grasslands to forest and mountain meadows (AGFD 2009). Development of private lands has removed

primary habitat and forced herds into less favorable habitats where predation rates are higher. Overall population trends on the Forest vary among hunt units, but based on data compiled from AGFD surveys for hunt units encompassing the herds on the Prescott NF, pronghorn numbers appear to be decreasing (Forest Service 2010).

Pronghorn habitat includes grassland-dominated portions of the Semi-desert, Great Basin, and Juniper grassland PNVTs where shrub/tree cover is less than 10 percent. Existing habitat is estimated at 202,004 acres.

Risk Factors - Movement and population interactions are limited by fencing and highway development. Habitat loss is occurring due to urban development. Tree and shrub encroachment into grasslands is impacting habitat quality (AGFD 2009).

Northern goshawk (*Accipiter gentilis*)

In North America, goshawks breed throughout most forested areas, from Alaska, east to eastern Canada, south to New England, and southern New Mexico and northern Mexico (NatureServe 2010). In Arizona, goshawks are found in high, forested mountains and plateaus statewide, usually above 6,000 feet elevation (AGFD 2003a). On the Prescott NF, six to eight sites were monitored from 2002-2005, with nine post-fledging family areas (PFAs) monitored in 2009. Successful fledging at monitored sites has been low.

Goshawks are known to occur on all three of the Ranger Districts of the Prescott NF including areas near Mingus Mountain, Camp Wood, Prescott Basin, and Crown King. The northern goshawk is associated with the ponderosa pine PNVTs and tree features for every aspect of its life history from nesting, to roosting, to foraging. Northern goshawk nesting habitat consists of mature and old growth forest stands with relatively high canopy closure. Foraging habitat for the northern goshawk would primarily consist of early, more open seral stages that provide habitat for key prey species including small mammals and passerine birds. Existing nesting habitat for this species is estimated at 50,489 acres, consisting of ponderosa pine stands with medium and large trees with open and closed canopies. Existing foraging habitat for the northern goshawk would be the 3,522 acres of seedling/sapling and small trees with open canopy in the two ponderosa pine PNVTs.

Environmental Consequences

The land management plan provides a programmatic framework that guides site-specific actions but does not authorize, fund, or carry out any project or activity. Because the land management plan does not authorize or mandate any ground-disturbing actions, there are no direct effects. However, there may be implications, or longer term environmental consequences, of management on the Prescott NF under this programmatic framework.

Species Effects Analysis

Table 18. Southwestern willow flycatcher effects summary

Southwestern willow flycatcher – Affected environment: The common theme in SWWF habitat requirements is “dense”: Dense riparian vegetation with thickets of trees and shrubs, dense riparian foliage from ground level to 13 ft., dense tree and/or shrub canopy for nest sites, dense patches of riparian forests interspersed with small openings (FWS 2005). The SWWF is historically known to occur along the Verde River. While sites are monitored along the Verde River currently, there are no known sites on Prescott NF NFS lands. The extent of the SWWF range on the Prescott NF is thought to be within the current Critical Habitat designation which is entirely along the Verde River and encompasses 1,339 acres along 9.4 miles on NFS lands.		
Measure	Alternative A	Alternatives B, C, & D
Effects to SWWF from impacts to habitat features: riparian	For all of the alternatives, by following the combination of the riparian guidelines and the wildlife guidelines for listed species, riparian SWWF habitat would be expected to be maintained or improved. Designing and implementing projects to incorporate the habitat management objectives and species protection measures in the SWWF Recovery Plan would be expected to lead to improved habitat conditions for the species. The guideline also allows for the flexibility to apply the best available science in managing for the species and its habitat. By implementing the objectives in the action alternatives, there would be more improvement to riparian vegetation habitat features with Alternatives B, C, and D than with Alternative A. With no known SWWF occurring on the Prescott NF at this time, there would not be any impacts to any individual SWWF.	
Compliance with Recovery Plan	A guideline to implement recovery plans would have similar effects to Alternatives B, C, & D.	These alternatives recommend incorporating habitat management objectives and species protection measures in the SWWF Recovery Plan by reference (Guide-WL-1) and therefore could comply with the management recommendations in that document. The guideline also allows the flexibility to apply the best available science in managing listed species habitat. Managing for the recovery of the species could eventually have beneficial effects for individual SWWF.

Table 19. Southwestern willow flycatcher Critical Habitat effects summary

Southwestern willow flycatcher Critical Habitat – Designated critical habitat for the SWWF occurs along the Verde River. There are 31.81 miles of habitat along the Verde River. Much of the habitat occurs on non-FS lands. The Prescott NF portion of the CH includes 9.4 miles of the Verde River.		
PCE:	Alternative A	Alternatives B, C, & D
Riparian habitat components:	Implementing projects using the combination of the riparian guidelines and the wildlife guidelines for listed species would be expected to maintain or improve riparian PCE for SWWF critical habitat. By implementing the objectives in the action alternatives, there would be more improvement to riparian vegetation habitat features with Alternatives B, C, and D than with Alternative A. Designing and implementing projects that consider the habitat management objectives and protection measures in the SWWF Recovery Plan would be expected to lead to improved habitat conditions. Being able to apply the best available science in managing the habitat for the species would also contribute towards recovering the species.	
Trees and shrubs – Native & introduced		
Dense riparian vegetation with thickets of trees and shrubs		
Dense riparian foliage at ground level to 13 ft.		
Nest sites with 50 -100% canopy of trees and/or shrubs		
Dense patches of riparian forest ¼ to 75 acres interspersed with small openings of open water or shorter vegetation		
Prey species habitat components: Variety of prey species populations within or adjacent to riparian		Same as above for all alternatives.

Table 20. Mexican spotted owl effects summary

Mexican spotted owl – Affected environment: MSO are known to occur on the Bradshaw and Verde RDs of the Prescott NF. They are found in stands of Ponderosa pine/Gambel oak with large trees, dense overstory, and woody debris including snags and downed logs. Known nesting sites are located on Mingus Mountain, in Prescott Basin, and at Crown King for a total of 15 Protected Activity Centers (PACs) on the Prescott NF. There are also acres of restricted habitat outside of the PACs.			
PNVT association: PP/QUGA: Medium/large trees with closed canopy			
Acres¹³	Alternative A	Alternatives B & D	Alternative C
Existing	26,448		

¹³ The acres reflect the modeled results of implementing the vegetation treatment Objectives for ponderosa pine Gambel oak PNVT.

Desired	7,358		
20 yrs.	24,526	24,526– 22,564	24,035– 21,583
40 yrs.	23,545	23,054– 21,092	23,054– 19,621
Measure	Alternative A	Alternatives B, C, & D	
Effects to MSO from changes in PNVT: PPO	This species is associated with a vegetative state or condition that is extremely over-represented across the landscape relative to historic proportions. The projected change in acres of this particular combination of habitat characteristics (medium/large trees with a closed canopy) is relatively small in all alternatives. As landscapes are restored to historic proportions, species may begin to use heretofore underrepresented and/or unavailable habitat characteristics and conditions. Desired conditions and guidelines for snags would ensure the presence of snags across the landscape. Complying with the laws and forest plan direction for federally listed species would ensure that the current habitat requirements for the MSO are met in project design and implementation. Moving the natural habitat for MSO toward the desired condition that more closely resembles historic conditions would be expected to improve the habitat for this species across the landscape. Increasing the abundance and distribution of large trees across the landscape would provide additional nesting habitat for MSO. Reducing canopy closure and increasing understory vegetation would improve habitat for MSO prey species across the landscape. Improving these two facets of the MSO habitat would be expected to have beneficial impacts to the species on the Prescott NF. Although the relative percent of PPO with medium/large trees with closed canopy slightly decreases in all alternatives, the improved quality of foraging habitat in the medium/large trees with open canopy may have an overall beneficial effect to MSO. The most important benefit to the proposed treatments within the PPO PNVT is the reduction of potential for large, landscape scale stand-replacing wildfires that could eliminate MSO habitat.		
Effects to MSO from impacts to habitat features: tree features & riparian	For all of the alternatives, by implementing the combination of the riparian guidelines and the wildlife guidelines for listed species, riparian MSO habitat would be expected to be maintained or improved. By implementing the objectives in the action alternatives, there would be more improvement to riparian vegetation habitat features with Alternatives B, C, and D than with Alternative A. For all of the alternatives, in the process of implementing projects/objectives, some tree habitat features will be negatively impacted for a short term. However, moving towards the desired conditions in all of the alternatives for the PPO will ultimately provide additional tree habitat features across the landscape as young and mid size/age trees are cultivated to grow into larger and/or older trees long term.		
Compliance with Recovery Plan	A guideline to implement recovery plans would have similar effects to Alternatives B,C, & D.	These alternatives recommend incorporating habitat management objectives and species protection measures in the MSO Recovery Plan by reference (Guide-WL-1) and therefore could comply with the management recommendations in that document. The guideline also allows the flexibility to apply the best available science in managing listed species habitat. Managing for the recovery of the species could eventually have beneficial effects for individual MSO.	

Table 21. Mexican spotted owl Critical Habitat effects summary

There are three Mexican spotted owl (MSO) Critical Habitat (CH) polygons associated with the Prescott NF. A small portion of UGM-13 lies across the boundary between the Prescott NF and the neighboring Kaibab NF in Sycamore Canyon Wilderness. None of the acres in that polygon are restricted or protected habitat. BR-W-2 is on the Bradshaw RD in the Prescott Basin. BR-W-3 is on the Bradshaw RD near Crown King. Per the Federal Register designating critical habitat, "WUI project areas, State and private lands are not designated as critical habitat" (FWS 2004). For the BR-W-2 polygon, the Boundary WUI project area is exempt from designation. For the BR-W-3 polygon, the Crown King/Ash Creek WUI project area is exempt from designation. The total number of acres of NFS lands within CH polygons on the Prescott NF is 44,814.			
CH Polygon	Total PNF acres	Acres of Protected Habitat	Acres of Restricted Habitat
UGM - 13	11,794	0	0
BR – W – 2	22,182	2,993	5,313
BR – W - 3	10,838	1,065	918
TOTAL on PNF	44,814	4,058	6,231
PCE	Alternative A	Alternatives B, C, & D	
Forested structure components:			
Range of tree species, 30-45% >12"dbh	Alternative A would exceed providing 30-35% of the area with trees >12"dbh assuming that a medium tree is >12"dbh.	DC-Ecosystem Resilience-1 reads: ➤ Habitat quality, distribution, and abundance exist to support recovery and/or stabilization of federally listed and other species. And the Guide-Wildlife-1 reads: ➤ Habitat management objectives and terrestrial species protection measures from approved recovery plans should be applied to activities occurring within federally listed species habitats. This management direction would ensure that all of these PCEs are provided for the MSO in the proposed LMP. Moving toward desired conditions for PPO would increase the number of trees with dbh>12".	
Shade canopy covering 40+% of habitat	With 77 percent of the PPO with closed canopy states at 20 years after implementation, all of the alternatives would be providing this PCE.		

Snags > 12” dbh	Current Forest Plan provides for 2 snags/ac >18”dbh in the ponderosa pine vegetation type.	DC-Veg-17 for ponderosa pine-Gambel oak reads: “A variety of snags species and coarse woody debris (greater than 3-inch diameter) are well distributed throughout the landscape. Snags are typically 18 inches or greater DBH and average 1 to2 per acre.” Combined with the federal species guidelines above, these alternatives would create conditions that would provide this PCE for MSO.
Prey species habitat components:		
Down woody	Current FP calls for retaining substantive amounts of down logs and hardwoods.	The combination of desired conditions and wildlife guidelines would ensure that these habitat components are provided.
Range of tree species including hardwoods		
Plant cover for fruits, seeds, & regeneration	Through a guideline for listed species recovery, this habitat component would be provided.	
Canyon habitat components:		
Presence of water	There would not be any change in the existing conditions or availability of water associated with canyon habitat among the alternatives.	
Stringers of conifer/ riparian vegetation	Through a standard for listed species recovery, this habitat component would be provided.	The combination of desired conditions and wildlife guidelines would ensure that these habitat components are provided for MSO.
Crevices, ledges, caves	There would not be any change in the existing conditions or availability of crevices, ledges, and caves associated with canyon habitat among the alternatives.	
Litter & woody debris	Current FP calls for retaining substantive amounts of down logs.	The combination of desired conditions and wildlife guidelines would ensure that these habitat components are provided.

Table 22. Morafka's desert tortoise effects summary

The Morafka's desert tortoise is both a federal candidate and a Regional Forester sensitive species. The Morafka's desert tortoise is associated with the desert communities PNVT. Desert tortoise occurrence on the Prescott NF is known from the south end of the Bradshaw RD near the towns of Cleator and Mayer.				
Desert communities PNVT (5,919 acres): The existing condition for the desert communities PNVT is a low departure from reference conditions or, similar to historic conditions. The alternatives include a desired condition relevant to desert communities in DC-Veg-22.				
Acres:	Alternative A	Alternatives B & D	Alternative C	
Existing	5,919 acres			
Desired				
20yrs				
40yrs				
Measure	Alternative A	Alternative B	Alternative C	Alternative D
Effects to species from impacts to DC PNVT.	DC habitats have low departure from reference conditions and are expected to remain near reference conditions over the next 40-80 years. There are no fire and vegetation treatment objectives in any of the developed alternatives for this PNVT or habitat.			
FP S&G's relative to sensitive species	While the Morafka's desert tortoise is protected under the ESA as a candidate species, there is no species specific direction for the tortoise at this time. Therefore, for all of the alternatives, the various guidelines for sensitive species would be expected to maintain or improve desert communities habitat associated with desert tortoise habitat needs. Sensitive species guidelines (WL-2) would include developing breeding season timing restrictions and other project design features to alleviate impacts from disturbance from prescribed burning, and other resource management activities occurring within desert community PNVT. Wildlife guidelines would provide for following current AZGFD handling guidelines for any desert tortoises encountered during project implementation.			

Table 23. Bald eagle effects summary

The bald eagle is associated with riparian habitat, as well as rock and tree features: The bald eagles are associated with the prey species habitat within the aquatic habitat in riparian systems. Bald eagles nest along the Verde River from Perkinsville to Camp Verde and at Lynx Lake and roost in the winter adjacent to Goldwater Lake.				
Measure	Alternative A	Alternative B	Alternative C	Alternative D
Effects to species from impacts to riparian habitat features.	Riparian habitats have low departure from reference conditions and are expected to remain near reference conditions over the next 40-80 years. By implementing the objectives in the action alternatives, there would be more improvement to riparian vegetation habitat features with Alternatives B, C, and D than with Alternative A.			
Effects to species from impacts to tree and rock features.	Tree and rock features are primarily nesting or roosting structures for bald eagles. The bald eagle would be afforded protection under the "Eagle Act" through Guide-WL-2 in Alternatives B-D. The bald eagle would also be afforded additional protection for nest sites under Guide-WL-5 in Alts B-D. These, in connection with designing features to provide the desired conditions for tree features, would provide for bald eagle nest sites.			

FP S&G's relative to sensitive species	The compliance with the "Eagle Act" in all alternatives would ensure that bald eagles were afforded the necessary protection to successfully nest and forage and roost. For all of the alternatives, the combination of the riparian guidelines and the various guidelines for sensitive species would be expected to maintain or improve riparian habitat features associated with sensitive species habitat needs. Sensitive species guidelines would include developing breeding season timing restrictions and other project design features to alleviate impacts from disturbance from harvest, prescribed burning, and other resource management activities occurring in the adjacent upland habitats.
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Effects to the remainder of the sensitive species will be grouped by PNVF or habitat feature association.

Table 24. Riparian habitat associated species effects summary

Riparian Habitat: Yellow-billed cuckoo (YBC), Abert's towhee, common black hawk, and western red bat are the species associated with riparian habitat features. While the YBC and towhee are more closely associated with understory riparian species, the black hawk and red bat are associated with the larger overstory trees for nesting and roosting, respectively. Red bats have also been known to "roost" in the leaf litter in the riparian zone. There are approximately 7,496 acres of suitable understory habitat and 4,247 acres of overstory habitat. The bald eagles are associated with the prey species habitat within the aquatic habitat in riparian systems.				
Measure	Alternative A	Alternative B	Alternative C	Alternative D
Effects to species from impacts to riparian habitat features.	Riparian habitats have low departure from reference conditions and are expected to remain near reference conditions over the next 40-80 years. By implementing the objectives in the action alternatives, there would be more improvement to riparian vegetation habitat features with Alternatives B, C, and D than with Alternative A.			
FP S&G's relative to sensitive species	While the YBC would be afforded protection under the ESA through Guide-WI-2 as a candidate species, there is no species specific direction for the YBC at this time. The common black hawk would be afforded additional protection for nest sites under Guide-WL-5 in Alts B-D. For all of the alternatives, the combination of the riparian guidelines and the various guidelines for sensitive species would be expected to maintain or improve riparian habitat features associated with sensitive species habitat needs. Sensitive species guidelines would include developing breeding season timing restrictions and other project design features to alleviate impacts from disturbance from harvest, prescribed burning, and other resource management activities occurring in the adjacent upland habitats.			

Table 25. Rock habitat associated species effects summary

Rock habitat features: The peregrine falcon, pocketed free-tailed bat, and pale Townsend's big-eared bat are all sensitive species associated with various rock feature habitats including caves, mines, cliffs, ledges, and outcrops. All of these species nest or roost in some way on or in these features. This implies that the sites are typically occupied by young of the respective species. These features can occur in any or all of the various PNVFs. Suitable habitat for the Prescott NF derived from modeling slope associated with digital elevation models with slopes greater than 65 percent selected to represent cliff habitat showed approximately 8,829 acres of cliff habitat on the Prescott NF for the peregrine and pocketed free-tailed bat. Abandoned mines used by Townsend's big-eared bats occur on all three districts with the majority of them on the Bradshaw RD. Quality of habitat associated with the mine features is highly variable.
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Measure	Alternative A	Alternative B	Alternative C	Alternative D
Effects to species from impacts to rock habitat features.	No management actions are prescribed for any rock feature habitat. Numerous guidelines for various resource areas providing for sensitive species habitat management would ensure the maintenance or improvement of sensitive species habitat associated with rock features. Guidelines Locatable minerals-2, Minerals-5, and WL-5 and 6 provide additional direction for considering wildlife life history and habitat needs associated with rock features.			
FP S&G's relative to sensitive species	The peregrine falcon would be afforded additional protection for nest sites under Guide-WL-5 in Alts B-D. For all of the alternatives, the various guidelines for sensitive species would be expected to maintain or improve rock habitat features associated with sensitive species habitat needs. Sensitive species guidelines would include developing breeding season timing restrictions and other project design features to alleviate impacts from disturbance from harvest, prescribed burning, and other resource management activities occurring on the rock feature or in adjacent vegetation areas.			

Table 26. Northern goshawk effects summary

<p>The northern goshawk is the sensitive species associated with various vegetative features found within both Ponderosa pine PNVTs. The northern goshawk is associated with the ponderosa PNVTs and tree features for every aspect of its life history from nesting, to roosting, to foraging. Goshawks are known to occur within the ponderosa pine type PNVTs on all three districts of the Prescott NF including Mingus Mountain, Camp Wood, Prescott Basin, and Crown King. All fourteen prey species listed for the northern goshawk in the Management Recommendations for Northern Goshawks (MRNG) (Forest Service 1992) are associated with medium/large tree vegetative structural stages (VSSs). Medium/large trees are important habitat components to thirteen of the fourteen prey species for maintaining sustainable populations. Openings are important for maintaining sustainable populations for eight of the fourteen prey species listed in the MRNG. Herbaceous and shrub components are important for thirteen of the fourteen prey species. Ten of the fourteen prey species listed in the MRNG are associated with early seral stages including seedling/saplings and small trees. All fourteen prey species need an interspersed of VSSs to maintain sustainable populations.</p> <p>Salafsky et. al. (2005) suggested that prey density was an important limiting factor of goshawk productivity. Later, studies showed that increased prey density results in increased goshawk reproduction in ponderosa pine (Salafsky, et. al. 2007). Dewey and Kennedy (2001) reported that significantly heavier nestlings from nests with supplemental food had higher survival rates than nestlings in control nests. In 1996, Ward and Kennedy reported that although there was no significant difference in nestling sizes due to additional food availability, they did document higher nestling survival due to increased time spent at nest by female which consequently provided protection from predators. Wiens et. al. (2006) reported that food availability was the primary factor limiting juvenile survival and recommended forest treatments that provide forest structural conditions that allow goshawks to access their prey within breeding areas.</p>			
<p>PP/QUGA & PPE:</p> <p>Nesting habitat: Medium/large trees w/ open and closed canopies</p> <p>Foraging habitat: Seedling/sapling & small trees with open canopies</p>			
Acres ¹⁴	Alternative A	Alternatives B & D	Alternative C
Existing nesting	50,489		
Desired	86,774		
20 yrs.	62,125	62,761 – 61,636	62,761 – 61,145

¹⁴ The acres reflect the modeled results of implementing the vegetation treatment Objectives for ponderosa pine and ponderosa pine evergreen oak PNVTs.

40 yrs.	63,397	65,302 – 62,415		65,302 – 61,975
Existing foraging	3,522			
Desired	20,388			
20 yrs.	17,524	18,651 - 21,538		18,651 - 22,518
40 yrs.	18,996	21,392 – 24,915		24,915 – 25,896
Measure	Alternative A	Alternative B	Alternative C	Alternative D
Effects to species from impacts to PNVT and tree features relevant to nesting habitat.	<p>The medium/large tree habitat components required by the goshawk for nesting will be more available across the landscape as the number of acres of medium/large trees increases. Both the Gamble oak and evergreen oak components of the ponderosa pine PNVTs contain desired conditions specific to meeting the goshawk habitat needs (DC-Veg-13,14,17, and 18) including forest stand structure as well as down woody material for prey species habitat needs and complying with current technical guides for the goshawk in the southwest. Sensitive species direction and guidelines would also apply to those places where goshawks are known to occur and potential habitat. Implementing projects designed to meet desired conditions specific for the goshawk and to comply with the guidelines providing for sensitive species habitat needs would ensure that goshawk habitat needs are met and would eliminate or minimize impacts to goshawks in the process. Moving the PPO PNVT toward the desired condition that more closely resembles historic conditions would be expected to improve the habitat for goshawks across the landscape. Increasing the abundance and distribution of medium/large trees across the landscape would provide additional nesting habitat for the goshawk in both of the ponderosa pine PNVTs. Based on the overlap in number of acres projected for nesting habitat in each alternative in the top part of this table, there would not be a discernible difference among the effects of the various proposed treatments within the alternatives for this particular habitat feature. All alternatives would be expected to provide additional and improved nesting habitat for northern goshawks.</p> <p>The projected changes in acres for medium/large trees would also be expected to considerably increase the amount of habitat for all of the prey species similarly among the alternatives. For all of the alternatives, all of the prey species would be expected to experience population increases associated with a greater amount of habitat which would, in turn, have positive impacts to goshawk populations.</p>			
Effects to species from impacts to PNVT and tree features relevant to foraging habitat.	<p>Reducing canopy closure and increasing understory vegetation would improve habitat for goshawk prey species including small mammals and small birds across the landscape. Moving acres into the seedling/sapling and small tree VSSs would create an interspersion of VSSs across the landscape. The diversity of habitats associated with the assortment of vegetative features would support a greater selection of prey species. This would provide conditions supporting a full complement of prey species and habitat less susceptible to catastrophic fire and insect and disease impacts. By providing a diverse suite of prey species, the goshawk prey base would be more resilient to impacts from climate, disease, predation, and prey species population fluctuations.</p>			

Summary effects for foraging habitat changes	With a 5-fold increase in prey species habitat in the seedling/sapling and small tree with openings components, there would be an expected increase in goshawk nestling condition, parental protection, and juvenile survival.	Based on the projected acres displayed at the top of this table, Alternatives B-D project a greater increase in acres of prey species habitat in the seedling/sapling and small tree with openings components than Alternative A. With a 5-6 fold increase in prey species habitat, there would be an even greater expected increase in goshawk nestling condition, parental protection, and juvenile survival than in Alternative A.
FP S&G's relative to sensitive species	For all of the alternatives, the various guidelines for sensitive species would be expected to maintain or improve tree features associated with sensitive species habitat needs. Sensitive species guidelines would include developing breeding season timing restrictions and other project design features to alleviate impacts from disturbance from harvest, prescribed burning, and other resource management activities occurring within both of the ponderosa pine PNVTs.	

Table 27. Plains harvest mouse effects summary

Not known to occur or documented on the Prescott NF (IUCN 2011, Hoffmeister 1986), potentially suitable habitat on Prescott NF: Desert scrub, chaparral, xeric conditions, mesquite (Hoffmeister 1986) and well developed short-grass prairies including cultivated agricultural areas (Linzey 2008). According to Linzey, the species has a wide range, a large population, is unlikely to be declining, and has no known major threats.			
PNVT associations: SDG: Grass/forb/shrub, Perennial grass, Perennial grass w/ shrubs & open canopy GB/GL: Grass/forb/shrub, Grass, Shrubs & trees w/ grass & open canopy JUG: Grass/forb/shrub, Seed/sapling/small trees w/ open canopy Desert communities			
Acres¹⁵	Alternative A	Alternatives B & D	Alternative D
Existing	202,004		
Desired	198,249		
20 yrs.	164,351	164,351	164,351
40 yrs.	145,489	145,489	145,489
Desert communities PNVT (5,919 acres)	The existing condition for the desert communities PNVT is a low departure from reference conditions or, similar to historic conditions. The alternatives include a desired condition relevant to desert communities in DC-Veg-22. There are no proposed objectives (treatments/management actions/projects) for desert communities PNVT in any of the alternatives.		

¹⁵ The acres reflect the modeled results of implementing the vegetation treatment Objectives for various grassland PNVTs. It does not include the desert community acres as there is no expected change in this PNVT.

Effects of impacts to PNVTs	Overall – While individual mice may be negatively impacted by activities in any alternative, the general impact to the species on a whole would be tied more to the amount and condition of the available habitat for the species. The difference between existing and desired habitat of an about 1.8 percent decrease reflects shifts in relative proportions of conditions/states towards more historic or reference conditions. Considering the diverse range of habitat inhabited by this species, it is highly unlikely that any management actions would have any discernible impact to the species when it is not known to occur on Prescott NF lands.
FP S&G's relative to sensitive species	For all of the alternatives, the various guidelines for sensitive species would be expected to maintain or improve grassland habitats associated with plains harvest mouse habitat needs. Sensitive species guidelines could include developing breeding season timing restrictions and other project design features necessary to alleviate impacts from disturbance from prescribed burning, and other resource management activities occurring within grassland PNVTs if plains harvest mice were found to occur and/or warrant such measures.

Table 28. Gunnison's prairie dog effects summary

None of the current records show this species as occurring on the Prescott NF (HDMS 2011). Gunnison's prairie dogs are closely tied to the grassland habitat. While major declines in the Gunnison's prairie dogs were attributed to the bubonic plague, subsequent poisoning and indiscriminate shooting have kept population numbers low. Maps of potential habitat for the Gunnison's prairie dog from both the federal register (FWS 2008) and the AZGFD (AZGFD 2007) show portions of the suitable habitat occurring within Prescott NF NFS lands.			
PNVT associations: SDG: Perennial grass GB/GL: Grass JUG: Grass/forb/shrub			
Acres	Alternative A	Alternatives B & D	Alternative D
Existing	105,668		
Desired	135,476		
20 yrs.	95,040	116,037 – 147,254	147,254 – 157,483
40 yrs.	92,311	125,006 – 159,669	161,041 – 168,919
Effects of impacts to PNVTs	<p>Alternative A moves away from desired conditions for this species and actually decreases the existing number of acres with habitat characteristics desirable for these species. Alternatives B and D most closely meet the mark of moving the landscape towards desired conditions for these species. Alternative C over shoots the target for desired habitat for these species. IF this species was known to occur on the Prescott NF and be occupying these habitats, these projected changes could influence the viability of the species. However, with no known occurrences of the species on the Prescott NF, it is difficult to know what, if any, impact these habitat changes may have on the viability of these species.</p> <p>The proposed Alternatives B-D would move the habitat towards desired conditions for these species through prescribed burning and interdisciplinary management of livestock grazing.</p>		
FP S&G's relative to sensitive species	Sensitive species guidelines could include developing breeding season timing restrictions and other project design features necessary to alleviate impacts from disturbance from prescribed burning, and other resource management activities occurring within grassland PNVTs if Gunnison's prairie dogs were found to occur and/or warrant such measures.		

Cumulative Environmental Effects

Mexican spotted owl

Private lands are interspersed with Prescott NF lands that contain restricted habitat and PACs. Activities including residential development, mining, and timber harvest have occurred on private lands, and are expected to continue at some level, thereby elevating the importance of Prescott NF lands in providing suitable MSO habitat. Private, State-owned, and BLM federal lands located outside, but adjacent to the Prescott NF appear to lack potential suitable MSO habitat. Three National Forests are adjacent to the Prescott NF and contain suitable habitat and designated critical habitat within the Basin and Range-West Recovery Unit (Tonto NF) and Upper Gila Recovery Unit (Coconino, Kaibab, and Tonto NFs). The Kaibab and Coconino NFs are currently undergoing analysis for Forest Plan Revision. Regulatory requirements under ESA and NMFA apply; thereby ensuring adequate levels of MSO habitat.

Southwestern willow flycatcher

In proximity to the Prescott NF, areas where SW willow flycatcher sightings and reported nesting have occurred along the Verde River appear to be located primarily on private lands located outside the Prescott NF in the vicinity of Camp Verde. Conservation status of suitable habitats and potential future impacts due to management on private lands is not known. Additional sightings and designated critical habitat along the Verde River occur within the Tonto NF. ESA requirements ensure that habitats are managed to support the species on adjacent National Forests.

Western yellow-billed cuckoo

Areas containing sightings during the breeding season as well as reported nesting are scattered through western, central, and southeastern Arizona. Those in proximity to the Prescott NF reported within the last 10 years are located primarily east and south of the Prescott NF, along the Verde River and its tributaries, as well as along portions of Ash Creek in the Agua Fria Basin. Ownership in these areas consists of a mix of private, State, BLM, and Forest Service (Coconino and Tonto NFs) lands. Conservation status of suitable habitats and potential future impacts due to management on non-federal lands is not known. The western yellow-billed cuckoo is managed as R3 Sensitive on the Coconino and Tonto NFs; therefore, it is expected that this species' habitats and populations will be maintained on National Forest System lands. In Arizona, yellow-billed cuckoo is classified as Tier 1A (Species of Greatest Conservation Need), and managed by Arizona BLM as a sensitive species (BLM 2010); therefore it receives management consideration on lands under both jurisdictions.

Morafka's desert tortoise

Occurrence and known range of Morafka's desert tortoise in Arizona occurs largely outside Prescott NF lands, which contains only one recorded observation of this species and less than 6,000 acres of desert habitat. Lands containing suitable habitats within the distribution of this species in Arizona are under a wide variety of ownerships (FWS 2010c). Those in proximity to the Prescott NF include portions in private, State, BLM, and the Tonto NF. Status and future condition of habitats on private lands are unknown. The species is classified as Tier 1A (Species of Greatest Conservation Need) by the State of Arizona, and managed by Arizona BLM as a sensitive species (BLM 2010); therefore it receives management consideration on lands under both jurisdictions. The species is managed as R3 sensitive on the Tonto National Forest; therefore, this species' habitats and populations are expected to be maintained.

Gunnison's prairie dog

Because Gunnison's prairie dog is not currently known to occur on the Prescott NF, no cumulative effects are expected. If the species is re-introduced or naturally expands onto the Forest, road access to colonies could increase the potential for recreational shooting and impacts to the species. It is expected that site-specific project analysis would address impacts to Gunnison's prairie dogs in the event of expansion onto the Prescott NF.

Pale Townsend's big-eared bat

Pale Townsend's big-eared bat roosting habitat is scattered throughout central Arizona, and is expected to occur on both federal and non-federal lands outside the Prescott NF. Inventory and remediation of abandoned mines that pose a potential safety and water quality hazard is identified as a management priority on BLM lands in Arizona, including priorities identified within the Hassayampa watershed (USDI no date?). Townsend's big-eared bat roosting habitat is also expected to occur on adjacent National Forests that include the Kaibab, Coconino, and Tonto NFs. The Kaibab and Coconino NFs are currently undergoing Forest Plan revision, and have considered Townsend's big-eared bats during the revision process. Because this is a R3 sensitive species applicable to all three National Forests, management consideration would be provided to preclude a trend toward federal listing.

Plain's harvest mouse

Distribution of this species' observations as displayed by Hoffmeister (1986) indicates that plains harvest mouse distribution in Arizona is patchy, with potential isolated populations. Sightings in central Arizona are restricted to central and eastern portions of Yavapai County. Areas outside the Prescott NF containing potential habitat include non-federal, BLM, and Coconino NF lands. Portions of historical habitat in the Chino Valley have been converted for agriculture, residential or urban development, thereby decreasing habitat availability. Structural condition of Semi-desert grassland vegetation on BLM and Coconino NF lands are likely to be similar to those described for the Prescott NF with increased shrub and tree component. Because the plains harvest mouse is a Region 3 Regional Forester's Sensitive Species known to occur on the Coconino NF, it is expected that provisions to support species habitats and populations will be included as elements of Forest Plan revision.

Pocketed free-tailed bats

Distribution of this species as displayed by AGFD TR 213 (AGFD 2003c) indicates that the Prescott NF is located at the northern extent of this species range in Arizona. Lands to the east, west, and south of the Prescott NF consist of non-federal, BLM, NPS, and FS ownerships. The species has been reported on NPS lands, and is listed as a BLM sensitive species in Arizona in 2005 and FS sensitive species for the Prescott NF and Tonto NFs. Current and future status of disturbance at potential roost sites on non-federal lands is unknown. Because the species has management status on adjacent federal lands, it is expected that some level of protection from disturbance of known sensitive roost sites would occur on these lands.

Western red bat

Areas where western red bat sightings have occurred are located east and south of the Prescott NF, within the Coconino and Tonto NFs (HDMS 2011). Because the species is R3 sensitive, it is expected that western red bat habitats and populations will be maintained on adjacent National Forests.

Abert's towhee

Areas containing sightings and reported nesting outside the Prescott NF are located primarily west and south with moderate occurrence in eastern and southern Yavapai County, and high concentrations of occurrence shown for eastern portions of Maricopa County and throughout most of Pinal County (Corman and Wise-Gervais 2005). Lands within these areas consist of a broad array of federal and non-federal ownership, where federal lands are largely under BLM and Tonto NF ownership. Conservation status of suitable habitats and potential future impacts due to management on non-federal lands is not known. The species is R3 sensitive, applicable to the Tonto NF; therefore, it is expected that this species' habitats and populations will be maintained on National Forest System lands.

American peregrine falcon

Since the nationwide ban on DDT, the threat of pesticide impacts to this species has decreased, and populations show increases in Arizona over the past several decades. Distribution of recorded peregrine falcon breeding is scattered across most of Arizona, with exception of the southwest corner of the State (Corman and Wise-Gervais 2005). Land ownership where nesting occurs varies widely among federal and non-federal entities, with breeding reported for Kaibab, Coconino, and Tonto NFs in addition to the Prescott NF (AGFD 2002). Current and future status of disturbance at potential roost sites on non-federal lands is unknown. Because the species has management status (R3 Sensitive) on adjacent National Forests, it is expected that some level of protection from disturbance of known nest sites would occur on these lands.

Bald eagle

Since the nationwide ban on DDT, the threat of pesticide impacts to this species has decreased, and populations show increases in Arizona over the past several decades. Distribution of recorded bald eagle breeding in Arizona is somewhat concentrated in the central portion of the state, mainly within Yavapai, Maricopa, and Pinal counties (Corman and Wise-Gervais 2005). Land ownership where nesting occurs varies widely among federal and non-federal entities, with breeding reported for Coconino, and Tonto NFs in addition to the Prescott NF (AGFD 2010a). Current and future status of disturbance at potential roost sites on non-federal lands is unknown. Because the species has management status on adjacent National Forests, it is expected that some level of protection from disturbance of known nest sites would occur on these lands.

Common black hawk

Areas outside the Prescott NF where numerous common black-hawk sightings have occurred are located east and south of the Prescott NF, along the Verde River potentially within portions of the Coconino and Tonto NFs (AGFD 2005). Because the species is R3 sensitive, it is expected that common black-hawk habitats and populations will be maintained on adjacent National Forests. Sightings to the west of the Prescott NF appear to be concentrated along Burro Creek, which is predominately under State and BLM ownership. The common black-hawk is a BOCC¹⁶ and a PIF¹⁷ priority species; therefore it receives management consideration on lands under both jurisdictions under the Migratory Bird Treaty Act.

¹⁶ Bird of Conservation Concern

¹⁷ Partners in Flight

Northern goshawk

Distribution of recorded goshawk breeding is restricted mainly to upper elevation forested portions of the State, with most concentrated on the Kaibab Plateau and Mogollon Rim (Corman and Wise-Gervais 2005). Land ownership where nesting has been reported is largely associated with National Forest lands. Because the species has management status on adjacent National Forests, it is expected that habitat maintenance as well as protection from disturbance of known nest sites would occur on these lands.

Unavoidable Adverse Impacts

The land management plan provides a programmatic framework that guides site specific actions but does not authorize, fund, or carry out any project or activity. Before any ground-disturbing actions take place, they must be authorized in a subsequent environmental analysis. Therefore none of the alternatives cause unavoidable adverse impacts. Mechanisms are in place to monitor and use adaptive management principles in order to help alleviate unanticipated impacts that need to be addressed singularly or cumulatively.

Irreversible and Irretrievable Commitment of Resources

The land management plan provides a programmatic framework that guides site-specific actions but does not authorize, fund, or carry out any project or activity. Because the land management plan does not authorize or mandate any ground-disturbing actions, no alternatives cause an irreversible or irretrievable commitment of resources.

Compliance with Eagle Act

Both bald and golden eagles are known to occur on the Prescott NF. The crux of determining compliance with this law is ascertaining if any eagles are “disturbed” to the level of “take”.

Bald eagles are known to occur along the Verde River on the Verde and Chino Valley RDs and at Lynx Lake on the Bradshaw RD. In the winter months, bald eagles roost along the Verde River as well as on the slopes adjacent to Goldwater Lake, a City of Prescott park surrounded by Prescott NF land. Bald eagles are primarily tied to nesting or roosting near water, their primary foraging habitat for waterfowl and fish. They are also known to be opportunistic scavengers. Water in the arid southwestern habitats of the Prescott NF also draws lots of people and recreation activities. Unfortunately, the limited available water-associated habitats present occasions for wildlife-human conflicts. For Alternative A, the requirement to comply with current laws would ensure that projects and activities within and adjacent to nest or roost sites would be designed to avoid causing any “take” under the Eagle Act. For Alternatives B, C, and D, the Wildlife Guideline-2 prescribing design features and mitigation measures for compliance with other laws would also ensure that there would not be any “take” of bald eagles under those alternatives.

Golden eagles typically nest in rock outcrops or on ledges on cliffs. Suitable habitat for the Prescott NF derived from modeling slope associated with digital elevation models with slopes greater than 65 percent selected to represent cliff habitat showed approximately 8,829 acres of cliff habitat on the Prescott NF. The only confirmed nest is on the north side of Woodchute Mountain with suitable habitat occurring on all three districts of the Prescott NF. They forage primarily within 8-12 square miles of the nest site. Typical prey includes medium-sized mammals including jack rabbits, ground squirrels, and prairie dogs. Other prey may include turkeys, new born ungulates, or domestic pets. Projects occurring in the upland portions of the landscape may present occasions for impacts to golden eagles including disturbance from

machinery, people, smoke, and animals. Most impacts or changes would occur within foraging habitat. Changes to foraging habitat would simply change the available prey for golden eagles and would not be considered to “disturb” eagles enough to warrant a “take”. For Alternative A, the requirement to comply with current laws would ensure that projects and activities within the vicinity of the nest site would be designed to avoid causing any “disturbance” that would lead to “take” under the Eagle Act. For Alternatives B, C, and D, the Wildlife Guideline-2 prescribing design features and mitigation measures for compliance with other laws would also ensure that there would not be any “take” of golden eagles under those alternatives.

For both species, Guide-WL-5 would afford additional protection at all known eagle nest sites.

Migratory birds Assessment

In accordance with the Migratory Bird Treaty Act, Executive Order 13186, and the MOU signed December 2008, this plan revision was evaluated for its effects on migratory birds.

A total of 92 species of migratory birds were assessed for their potential to occur on the Prescott NF (Forest Service 2011a).

- 14 species of migratory birds are addressed elsewhere in this analysis based on status such as federally listed under ESA, federally protected under the Eagle Act, Forest Service sensitive, or Forest Plan MIS. All of these species are considered to occur on the Prescott NF.
- 19 other species would be expected to occur on the Prescott NF.
- 13 species are not known whether or not they would occur on the Prescott NF.
- 12 species could potentially or possibly occur on the Prescott NF.
- 32 species would not be expected to occur on the Prescott NF.
- 2 species are yet to be determined regarding their status on the Prescott NF.

For a list of the remaining 46 species of migratory birds considered for the Prescott NF, see the list in Appendix 3.

Effects to migratory birds are grouped by changes to conditions within each PNV, impacts to habitat features, and potential for impacts from activities to migratory birds. Migratory birds are associated with various aspects, features, and seral stages of the different PNVTs. Moving toward desired conditions that reflect reference conditions would provide habitat components for all migratory bird species on a landscape basis. A summary of the effects of the alternatives relative to how closely each alternative resembles the desired conditions is taken directly from the Vegetation and Fire Report (Forest Service 2011b).

Similarity to Desired Conditions Index

The amount of tree and shrub thinning and prescribed fire proposed under each alternative, as modeled in VDDT, influences the attainment of desired conditions. The Similarity to Desired Conditions Index (or Similarity Index), represents the relative similarity between the “current conditions” and the “desired conditions” for a given vegetation type. This is measured by comparing the relative proportions in each vegetation state at time [0, 10, 20, 40 or 80 yrs.] to the proportions expressed in the desired set of conditions for each PNV. Higher index values are an indicator that ecosystems are retaining their components, processes, and functions under changing environmental conditions.

Similarity Index Consequences Common to All Alternatives

Model outputs indicate a positive trend in the similarity index values over time for all PNVTs (Table 28) except riparian gallery forest for which not data was available. As a result, all of the alternatives show some improvement in desired conditions over the long-term. None of them show movement away. This movement toward desired conditions may be the result of the passage of time as much as the result from proposed treatments and manipulations to vegetation structure. That said, the more relevant measure is, “To what degree do the alternatives show improvement in desired conditions for each PNVT?”

Similarity Index Consequences Summary by PNVT by Alternatives

Table 29. Vegetation PNVTs and similarity index

PNVT	Desired Conditions	<u>Alternative A</u>	<u>Alternatives B and D</u>	<u>Alternative C</u>
Semi-Desert Grassland	High	Low Increases to Moderate	Low Increases to High	Low Increases to High Soonest
Great Basin Grassland	High	High Declines to Moderate	High Stays High	
Interior chaparral	High	High Stays High		
Juniper Grassland	High	Moderate Increases to High		
Piñon-Juniper shrubland	High	Low Increases to Moderate		
Piñon-Juniper Woodland	High	High Stays High		
Pine-evergreen oak	High	Low Increases to Moderate		
Pine-Gambel oak	High	Low Stays Low		
Desert Communities	High	High Stays High		
Riparian Gallery	High	Indicator trend data not available		
SUMMARY		Least development toward desired conditions	Moderate development toward desired conditions	Most development toward desired conditions

Table 30. Assessment of effects to migratory birds

Measure for MBTA	Alternative A	Alternatives B	Alternative C	Alternative D
Changes to PNVTs	Least improved habitat conditions for migratory birds	Moderately improved habitat conditions for migratory birds.	Most improved habitat conditions for migratory birds	Moderately improved habitat conditions for migratory birds.
Effects to Habitat Features	Alternative A would have the least improvement to riparian habitat. Treating the fewest acres in forested habitats, this alternative would have the least improvement in tree feature habitat.	<p>There is no difference among these alternatives in the proposed projects to improve watershed integrity; therefore these aspects of the alternatives would have similar positive effects of improving all aspects of riparian habitat features.</p> <p>With almost double the reaches of stream habitat to improve, Alternative C would improve the most riparian habitat.</p> <p>Changes in tree habitat features would be tied to the changes in the respective PNVTs. Designing projects to move toward or achieve desired conditions would provide tree features across all landscapes.</p>		
Effects of actions	Treating the least number of acres, proposing the least recreation projects, and with few projects proposed for watershed or wildlife, and no new wilderness, this alternative would have the lowest potential for disturbance impacts to migratory birds or their habitats.	Treating a moderate number of acres, proposing a moderate range of recreation projects, and proposing a moderate range of projects for watershed or wildlife, this alternative would have more potential for disturbance impacts to migratory birds or their habitats than Alternative A and less potential for impacts than Alternative C.	Treating the highest number of acres, proposing a moderate range of recreation projects and proposing a moderate range of projects for watershed, and the most projects proposed for wildlife, and no new wilderness, this alternative would have the highest potential for disturbance impacts to migratory birds or their habitats.	Treating a moderate number of acres, proposing the most recreation projects, and proposing a moderate range of projects for watershed or wildlife, this alternative would have a similar potential for disturbance impacts to migratory birds or their habitats to Alternative B.

Relationship of Short-Term Impacts and Long-Term Benefits

A factor to be considered in this analysis is the short-term impacts to migratory bird species and their habitats from management actions and the long-term benefit to the ecological conditions to support viable populations of these species in the planning area. The following applies to all alternatives.

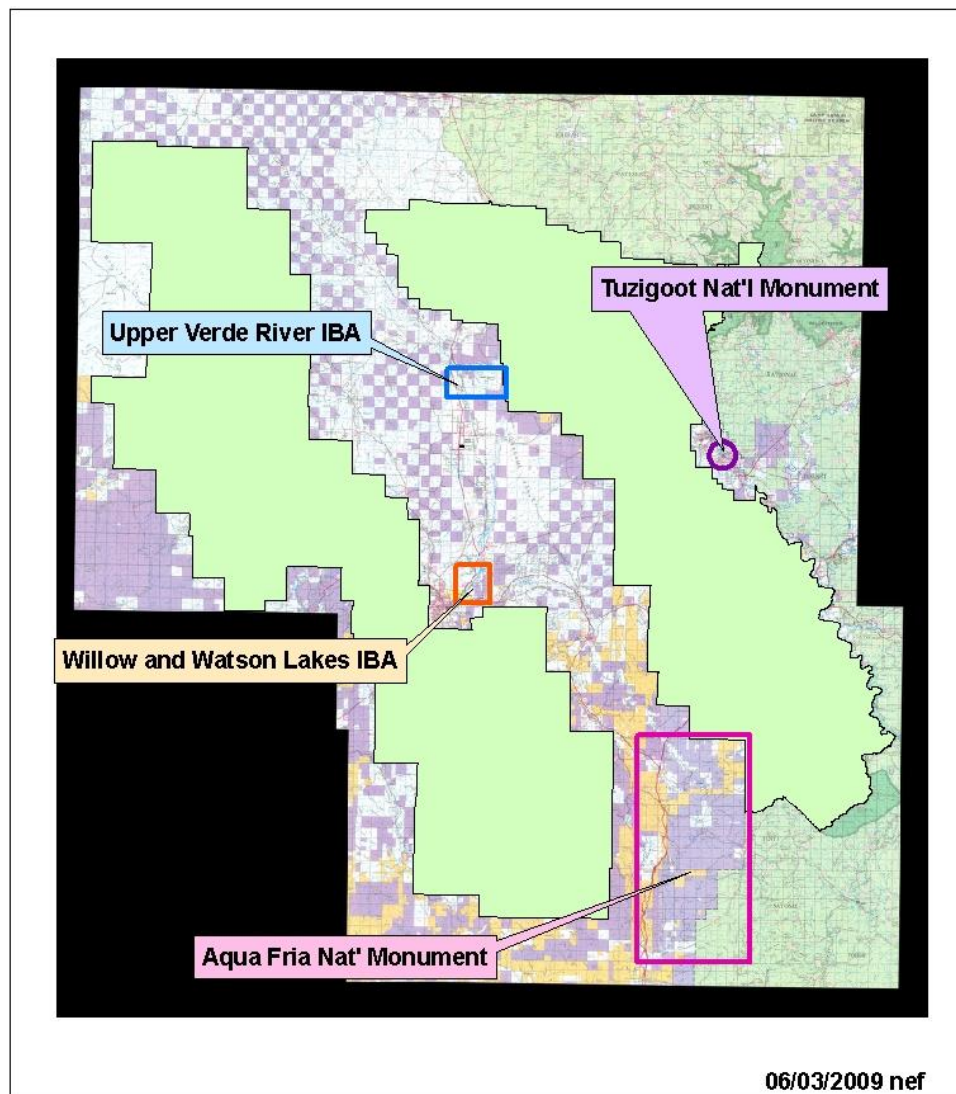
Forest management actions that have high disturbance levels to vegetation and soils such as fire use, timber harvest, and roads have the greatest potential to impact migratory bird species and their habitats. In general, the larger the area impacted, the higher is the potential for negative effects. Under all alternatives, the use of fire to meet resource objectives and desired conditions would result in low intensity/severity fire and fewer impacts to individuals and their habitats. An exception to this is fire use in chaparral which tends to result in higher intensity burns which is characteristic for this vegetation type. In most cases, vegetative ground cover in all treated areas is expected to recover quickly (within 7 years) and reestablish shrub component vegetation levels to pre-fire heights and densities. In the long term, treatments are

expected to restore the historic fire regime in the vegetation types, improve vegetative conditions, and reduce the potential for large, wildfire events.

The other management actions such as timber harvest, fuelwood harvest, mechanical fuels reduction treatments (e.g. brush crushing), recreational developments and activities, would have less short-term impacts to terrestrial ecosystems because of their smaller areas of impacts across the forest.

Important Bird Areas

Important Bird Areas in the vicinity of the Prescott National Forest



Four Important Bird Areas (IBAs) lie near the Prescott NF (PNF 2011). Guide-WL-2 would provide for site specific projects to consider these IBAs and the Conservation Issues for these areas in project level NEPA under the Migratory Bird Treaty Act. Restoring landscapes to reference conditions would be expected to improve habitat conditions on adjacent IBAs.

Management Indicator Species

The Management Indicator Species (MIS) selection process is documented in the project record. For terrestrial habitat, two species were chosen. The northern goshawk (*Accipiter gentilis*) was chosen to represent the ponderosa pine PNVTs on the Prescott NF. The pronghorn (*Antilocapra americana*) was selected to represent the grassland PNVTs on the Prescott NF. Both species are representative of the entire respective PNVt types. The more similar the PNVTs are to the desired conditions based on reference conditions, the more quality habitat should be available for the respective MIS. Acre calculations are taken from the Viability Report (Forest Service 2011d).

Table 31. Management Indicator Species - Pronghorn

Habitat for the pronghorn is primarily open grassland with little shrub component. Land ownership is primarily private with some state and federal ownership including both BLM and Forest Service.			
PNVT associations: SDG: Grass/forb/shrub, Perennial grass, Perennial grass w/ shrubs & open canopy GB/GL: Grass/forb/shrub, Grass, Shrubs & trees w/ grass & open canopy JUG: Grass/forb/shrub, Seed/sapling/small trees w/ open canopy			
Acres	Alternative A	Alternatives B & D	Alternative C
Existing	202,004		
Desired	198,249		
20yrs	164,351	177,486 – 196,930	196,930 – 203,983
40yrs	145,489	171,246 – 195,669	198,414 – 200,591
The difference between existing and desired habitat of an about 1.8 percent decrease reflects shifts in relative proportions of conditions/states towards more historic or reference conditions. Objectives 25-27 are specifically designed to improve pronghorn habitat conditions. Where suitable habitat occurs, Objective 28 would also improve pronghorn habitat quality. While the degree of improvement varies among alternatives, all alternatives include projects intended to improve the quality of pronghorn habitat on available on Prescott NF lands. Alt A includes a guideline addressing wildlife fence standards on Page 27. For Alternatives B-D, by following Guide-WL-3, fence specifications, fawning habitat needs, migration corridors, and general habitat improvement would be part of project design and implementation where pronghorn occur and pronghorn habitat needs on Prescott NF lands should be addressed. As the habitat off the Prescott NF becomes less available, Prescott NF habitat for pronghorn will become more crucial to providing for the species. Improving the habitat quality and managing for their habitat needs physically, spatially, and temporally will provide the best possible opportunity for contributing to the habitat needs for pronghorn on the Prescott NF. Guide WL-8, Lands-2 and 4, and Trans-1 would all provide for habitat connectivity for pronghorn movement among suitable habitat pieces.			
Pronghorn objectives:			

O -25: Modify or remove at least 3-5 miles of fence to facilitate pronghorn antelope movement during the 10 years following Plan approval.			
Fence modification	2 miles	3-5 miles	10-15 miles
O -26: Treat 15,000 to 90,000 acres to increase pronghorn habitat quantity and quality during the 10 years following the Plan approval.			
Improve habitat	4,750 acres	15,000 – 90,000 acres	50,000 – 85,000 acres
O -27: Treat 2 to 3 areas to facilitate pronghorn migration during the 10 years following Plan approval.			
Migration corridor	-----	2 to 3 corridors	3 to 6 corridors
O -28: Improve 3 to 15 water developments for wildlife during the 10 years following Plan approval.			
Water developments	5 water developments	3 to 15 waters	5 to 15 waters
Effects of pronghorn objectives	<p>Modifying 2 miles of fence and 5 water structures would slightly improve pronghorn ability to navigate within and utilize portions of its habitats.</p> <p>Improving the habitat quality on 4,750 acres would improve a small limited distribution of habitat relative to the potential across the landscape. Use of habitat would be even more limited without any corridors treated.</p>	<p>Modifying 3-5 miles of fence and 3-15 water structures would moderately improve pronghorn ability to navigate within and utilize portions of its habitats.</p> <p>Improving the habitat quality on a wide range of acres and treating 2-3 corridors would make more habitat areas accessible to pronghorn.</p>	<p>Modifying 10-15 miles of fence and 5-15 water structures would considerably improve pronghorn ability to navigate within and utilize portions of its habitats.</p> <p>Improving the habitat quality on a higher range of acres and treating 3-6 corridors would make the most habitat areas accessible to pronghorn.</p>
Implications for population trends	<p>This alternative improves the least acres and structures for the pronghorn. Population trends might be expected to remain static or possibly decline with this alternative as Prescott NF lands do not provide enough alternate habitats for pronghorn displaced from non-FS lands.</p>	<p>These alternatives improve a moderate amount of habitat and structures for pronghorn habitat.</p> <p>Population trends might be expected to remain static or possibly increase with this alternative as Prescott NF lands provide alternate habitats for pronghorn displaced from non-FS lands.</p>	<p>This alternative improves the most habitat and the most structures for the pronghorn.</p> <p>Population trends might be expected to possibly increase with this alternative as Prescott NF lands provide alternate habitats for pronghorn displaced from non-FS lands.</p>

Table 32. Management Indicator Species - Northern goshawk

The northern goshawk is the MIS species associated with various vegetative features found within both Ponderosa pine PNVTs. The northern goshawk is associated with the ponderosa PNVTs and tree features for every aspect of its life history from nesting, to roosting, to foraging. Goshawks are known to occur within the ponderosa pine type PNVTs on all three districts of the Prescott NF including Mingus Mountain, Camp Wood, Prescott Basin, and Crown

King. Twelve of the fourteen prey species listed for the northern goshawk in the Management Recommendations for Northern Goshawks (MRNG) (Forest Service 1992) are associated with ponderosa pine forest. All twelve of the pine associated prey species are associated with medium/large tree vegetative structural stages (VSSs). Medium/large trees are important habitat components to all twelve of the prey species for maintaining sustainable populations. Openings are important for maintaining sustainable populations for six of the twelve prey species listed in the MRNG. Herbaceous and shrub components are important for nine of the twelve prey species. Eight of the twelve prey species are associated with early seral stages including seedling/saplings and small trees. All twelve prey species need an interspersed of VSSs to maintain sustainable populations.

Salafsky et al (2005) suggested that prey density was an important limiting factor of goshawk productivity. Later, studies showed that increased prey density results in increased goshawk reproduction in ponderosa pine (Salafsky, et. al. 2007). Dewey and Kennedy (2001) reported that significantly heavier nestlings from nests with supplemental food had higher survival rates than nestlings in control nests. In 1996, Ward and Kennedy reported that although there was no significant difference in nestling sizes due to additional food availability, they did document higher nestling survival due to increased time spent at nest by female which consequently provided protection from predators. Wiens et. al. (2006) reported that food availability was the primary factor limiting juvenile survival and recommended forest treatments that provide forest structural conditions that allow goshawks to access their prey within breeding areas.

PP/QUGA & PPE:

Nesting habitat: Medium/large trees w/ open and closed canopies

Foraging habitat: Seedling/sapling & small trees with open canopies

Acres ¹⁸	Alternative A	Alternatives B & D		Alternative C
Existing nesting	50,489			
Desired	86,774			
20 yrs.	62,125	62,761 – 61,636		62,761 – 61,145
40 yrs.	63,397	65,302 – 62,415		65,302 – 61,975
Existing foraging	3,522			
Desired	20,388			
20 yrs.	17,524	18,651 - 21,538		18,651 - 22,518
40 yrs.	18,996	21,392 – 24,915		24,915 – 25,896
Measure	Alternative A	Alternative B	Alternative C	Alternative D
Effects to species from impacts to PNVT and tree features relevant to nesting habitat.	The medium/large tree habitat components required by the goshawk for nesting will be more available across the landscape as the number of acres of medium/large trees increases. Both the Gamble oak and evergreen oak components of the ponderosa pine PNVTs contain desired conditions specific to meeting the goshawk habitat needs (DC-Veg-13,14,17, and 18) including forest stand structure as well as down woody material for prey species habitat needs and complying with current technical guides for the goshawk in the southwest. Sensitive species direction and guidelines would also apply to those places where goshawks are known to occur and potential habitat. Implementing projects designed to meet desired conditions specific for the goshawk and to comply with the guidelines providing for sensitive species habitat needs would ensure that goshawk habitat needs are met and would eliminate or minimize impacts to goshawks in the process. Moving the PPO PNVT toward the desired			

¹⁸ The acres reflect the modeled results of implementing the vegetation treatment Objectives for ponderosa pine and ponderosa pine evergreen oak PNVTs.

	<p>condition that more closely resembles historic conditions would be expected to improve the habitat for goshawks across the landscape. Increasing the abundance and distribution of medium/large trees across the landscape would provide additional nesting habitat for the goshawk in both of the ponderosa pine PNVTs. Based on the overlap in number of acres projected for nesting habitat in each alternative in the top part of this table, there would not be a discernible difference among the effects of the various proposed treatments within the alternatives for this particular habitat feature. All alternatives would be expected to provide additional and improved nesting habitat for northern goshawks.</p> <p>The projected changes in acres for medium/large trees would also be expected to considerably increase the amount of habitat for all of the prey species similarly among the alternatives. For all of the alternatives, all of the prey species would be expected to experience population increases associated with a greater amount of habitat which would, in turn, have positive impacts to goshawk populations.</p>	
Effects to species from impacts to PNVt and tree features relevant to foraging habitat.	<p>Reducing canopy closure and increasing understory vegetation would improve habitat for goshawk prey species including small mammals and small birds across the landscape. Moving acres into the seedling/sapling and small tree VSSs would create an interspersed of vegetative features would support a greater selection of prey species. This would provide conditions supporting a full complement of prey species and habitat less susceptible to catastrophic fire and insect and disease impacts. By providing a diverse suite of prey species, the goshawk prey base would be more consistent and resilient to impacts from climate, disease, predation, and prey species population fluctuations.</p>	
Summary effects for foraging habitat changes	<p>With a 5-fold increase in prey species habitat in the seedling/sapling and small tree with openings components, there would be an expected increase in goshawk nestling condition, parental protection, and juvenile survival.</p>	<p>Based on the projected acres displayed at the top of this table, Alternatives B-D project a greater increase in acres of prey species habitat in the seedling/sapling and small tree with openings components than Alternative A. With a 5-6 fold increase in prey species habitat, there would be an even greater expected increase in goshawk nestling condition, parental protection, and juvenile survival than in Alternative A.</p>
FP S&G's relative to sensitive species	<p>As a sensitive species, for all of the alternatives, the various guidelines for sensitive species would be expected to maintain or improve tree features associated with goshawk habitat needs. Sensitive species guidelines would include developing breeding season timing restrictions and other project design features to alleviate impacts to goshawks from disturbance from harvest, prescribed burning, and other resource management activities occurring within both of the ponderosa pine PNVTs. Guide-WL-5 would also afford additional protection for nest sites in Alternatives B-D.</p>	
Implications for population trends – nesting habitat	<p>All alternatives improve acres of nesting habitat for the goshawk. For the nesting habitat, all of the alternatives overlap and there is no discernible difference among the alternatives for this habitat feature. There would not be a discernible difference in effects to the goshawk population trend among alternatives for this habitat feature.</p>	
Implications for population trends – foraging habitat	<p>With a 5-fold increase in prey species habitat, there would be an expected increase in goshawk nestling condition, parental protection, and juvenile survival.</p>	<p>With a 5-6 fold increase in prey species habitat, there would be an even greater expected increase in goshawk nestling condition, parental protection, and juvenile survival than in Alternative A.</p>

Population trend	Alternative A	Alternatives B & D	Alternative C
Population trend changes	Potential increase in population.	Greater potential increase in population.	

Biological evaluation & determination of effects

The purpose of this biological evaluation is to document the determination of effects of the proposed action and other action alternatives on animals and habitats federally listed under the Endangered Species Act (ESA), protected under the Eagle Act, or on the Regional Forester's sensitive species list.

Based on the effects analyses above,

- ✓ I find that this project will have **no effect** to federally listed Southwestern willow flycatcher and designated SWWF Critical Habitat.
- ✓ I find that this project will have **no effect** to candidate species Western yellow-billed cuckoo and the Morafka's desert tortoise.
- ✓ I find that this project **may affect and is not likely to adversely affect** federally listed Mexican spotted owl.
- ✓ I find that this project will **not result in destruction or adverse modification of** designated Mexican spotted owl Critical Habitat.

Based on the effects analyses above,

- ✓ I find that this project will not result in take under the "Eagle Act" to federally protected bald and golden eagles.

Based on the effects analyses above,

- ✓ I find that this project is not likely to trend toward listing any Regional Forester sensitive species on the Prescott National Forest.

Signatures:

Prepared by:



Noel Fletcher
Wildlife Biologist
Prescott NF

June 20, 2012

Date

Approved by:



Dan Garcia de la Cadena
Wildlife Biologist
Prescott NF

June 20, 2012

Date

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Appendix 1

Southwestern Willow Flycatcher Critical Habitat Primary Constituent Elements

Table 33. Southwestern willow flycatcher – Critical Habitat Primary Constituent Elements

(1) Riparian habitat in a dynamic successional riverine environment (for nesting, foraging, migration, dispersal, and shelter) that comprises:
(a) Trees and shrubs that include Gooddings willow (<i>Salix gooddingii</i>), coyote willow (<i>Salix exigua</i>), Geyers willow (<i>Salix geyerana</i>), arroyo willow (<i>Salix lasiolepis</i>), red willow (<i>Salix laevigata</i>), yewleaf willow (<i>Salix taxifolia</i>), pacific willow (<i>Salix lasiandra</i>), boxelder (<i>Acer negundo</i>), tamarisk (<i>Tamarix ramosissima</i>), Russian olive (<i>Eleagnus angustifolia</i>), buttonbush (<i>Cephalanthus occidentalis</i>), cottonwood (<i>Populus fremontii</i>), stinging nettle (<i>Urtica dioica</i>), alder (<i>Alnus rhombifolia</i> , <i>Alnus oblongifolia</i> , <i>Alnus tenuifolia</i>), velvet ash (<i>Fraxinus velutina</i>), poison hemlock (<i>Conium maculatum</i>), blackberry (<i>Rubus ursinus</i>), seep willow (<i>Baccharis salicifolia</i> , <i>Baccharis glutinosa</i>), oak (<i>Quercus agrifolia</i> , <i>Quercus chrysolepis</i>), rose (<i>Rosa californica</i> , <i>Rosa arizonica</i> , <i>Rosa multiflora</i>), sycamore (<i>Platanus wrightii</i>), false indigo (<i>Amorpha californica</i>), Pacific poison ivy (<i>Toxicodendron diversilobum</i>), grape (<i>Vitis arizonica</i>), Virginia creeper (<i>Parthenocissus quinquefolia</i>), Siberian elm (<i>Ulmus pumila</i>), and walnut (<i>Juglans hindsii</i>).
(b) Dense riparian vegetation with thickets of trees and shrubs ranging in height from 2 m to 30 m (6 to 98 ft.). Lower-stature thickets (2 to 4 m or 6 to 13 ft. tall) are found at higher elevation riparian forests and tall-stature thickets are found at middle- and lower elevation riparian forests;
(c) Areas of dense riparian foliage at least from the ground level up to approximately 4 m (13 ft.) above ground or dense foliage only at the shrub level, or as a low, dense tree canopy;
(d) Sites for nesting that contain a dense tree and/or shrub canopy (the amount of cover provided by tree and shrub branches measured from the ground) (<i>i.e.</i> , a tree or shrub canopy with densities ranging from 50 percent to 100 percent);
(e) Dense patches of riparian forests that are interspersed with small openings of open water or marsh, or shorter/ sparser vegetation that creates a mosaic that is not uniformly dense. Patch size may be as small as 0.1 ha (0.25 ac) or as large as 70 ha (175 ac); and
(2) A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, including: flying ants, wasps, and bees (Hymenoptera); dragonflies (Odonata); flies (Diptera); true bugs (Hemiptera); beetles (Coleoptera); butterflies/moths and caterpillars (Lepidoptera); and spittlebugs (Homoptera).

Appendix 2

Mexican spotted owl – Critical Habitat Primary Constituent Elements

Table 34. Mexican spotted owl – Critical Habitat Primary Constituent Elements

The primary constituent elements for the Mexican spotted owl are:
<p>(A) Primary constituent elements related to forest structure:</p> <ul style="list-style-type: none"> (1) A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 to 45 percent of which are large trees with a trunk diameter of 12 inches (0.3 meters) or more when measured at 4.5 feet (1.4 meters) from the ground; (2) A shade canopy created by the tree branches covering 40 percent or more of the ground; and (3) Large dead trees (snags) with a trunk diameter of at least 12 inches (0.3 meters) when measured 4.5 feet (1.4 meters) from the ground.
<p>(B) Primary constituent elements related to maintenance of adequate prey species:</p> <ul style="list-style-type: none"> (1) High volumes of fallen trees and other woody debris; (2) A wide range of tree and plant species, including hardwoods; and (3) Adequate levels of residual plant cover to maintain fruits, seeds, and allow plant regeneration.
<p>(C) Primary constituent elements related to canyon habitat include one or more of the following:</p> <ul style="list-style-type: none"> (1) Presence of water (often providing cooler and often higher humidity than the surrounding areas); (2) Clumps or stringers of mixed-conifer, pine-oak, piñon-juniper, and/or riparian vegetation; (3) Canyon wall containing crevices, ledges, or caves; and (4) High percent of ground litter and woody debris.

Appendix 3

Table 35. Migratory bird species considered

Species	BOCC/PIF	Habitat Type	PNF?	Reference
Band-tailed Pigeon	PIF	Madrean pine/oak	Yes	BBA
Black-chinned Sparrow	BOCC/PIF	Dry chaparral & PJ	Yes	BBA
Black-throated Gray Warbler	BOCC/PIF	PJ & oak woodlands	Yes	BBA AF – Passage UV – Breeding Tritle
Canyon Towhee	BOCC	Chaparral, open PJ, and open evergreen oak	Yes	BBA
Grace's Warbler	BOCC	Open, mature pine	Yes	BBA AF – Mention Tritle
Gray Flycatcher	PIF	Piñon-juniper	Yes	BBA AF – Breeding TZ - Mention
Gray Vireo	BOCC/PIF	Open PJ	Yes	BBA AF - Passage
Olive Warbler	BOCC	Pine and mixed conifer	Yes	BBA
Phainopepla	BOCC	Open woodlands w/ mistletoe	Yes	BBA
Piñon Jay	BOCC/PIF	Piñon-juniper	Yes	BBA UV - nonbreeding
Purple Martin	PIF	Sonoran Desert scrub & Pine	Yes	BBA TZ - Mention
Virginia's warbler	PIF	Chaparral	Yes	BBA AF – Passage TZ – Mention Tritle

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Species	BOCC/PIF	Habitat Type	PNF?	Reference
Yellow Warbler (<i>sonorana</i> ssp.)	BOCC	Cottonwood/willow riparian	Yes	BBA AF/UV - Breeding
Cordilleran Flycatcher	PIF	Pine, mixed conifer	Yes	BBA - Forest-wide AF – Passage TZ – Mention Tritle
Brewer's Sparrow	BOCC/PIF	Cold desert scrub	Yes	BBA - Williamson Valley – BCR 16 AF/TZ - Passage
Golden eagle	BOCC	Desert scrub to conifer	Yes	BCR 16 – BBA AF – Nonbreeding UV - Breeding
Bell's Vireo (c)	BOCC	Low elevation riparian with willows, mesquite & dense shrubs	Yes	HDMS/BBA - Along Verde River AF – Breeding TZ - Mention
Swainson's Hawk	PIF	High elevation grassland	Yes	Known from Chino Valley AF - Passage
Red-faced Warbler	BOCC/PIF	Mixed conifer and riparian forest	Yes	Known from field observations on Prescott NF
Flammulated Owl	BOCC	Dry coniferous forests	Yes	Known on Prescott NF – from field observations
Ferruginous Hawk	BOCC/PIF	High elevation grassland	Unknown - None reported but would expect them	HDMS/BBA BCR 16 UV – Nonbreeding, passage
Olive-sided Flycatcher	PIF	Pine & Mixed Conifer	Unknown	BBA AF - Mention
Sage Sparrow	PIF	Cold desert scrub	unknown	BBA AF - Mention

Species	BOCC/PIF	Habitat Type	PNF?	Reference
Black rosy-finch	BOCC	Unknown	Unknown	BCR 16
Brown-capped rosy-finch	BOCC	Unknown	Unknown	BCR 16
Chestnut-collared Longspur (nb)	BOCC	Unknown	Unknown	BCR 16
Black skimmer	BOCC	Sonoran & Mojave Deserts	Unknown	BCR 33
Gull-billed tern	BOCC	Sonoran & Mojave Deserts	Unknown	BCR 33
Le Conte's Thrasher	BOCC/PIF	Sonoran Desertscrub	Unknown	BCR 33
Marbled godwit	BOCC	Sonoran & Mojave Deserts	Unknown	BCR 33 WW - Passage
Whimbrel	BOCC	Sonoran & Mojave Deserts	Unknown	BCR 33
Gila woodpecker	BOCC	Sonoran desert	Unknown	BCR 33 – Sonoran & Mojave Desert
Burrowing Owl	PIF	High elevation grassland	Potentially	HDMS/BBA - BCR 33 – Sonoran & Mojave Desert
Cassin's Sparrow	PIF	Semi-desert grassland	Possibly	BBA - Camp Verde
Bendire's Thrasher	BOCC	Open desert scrub	Possible	BBA AF - Nonbreeding
Elf Owl	BOCC	Saguaros & sycamore cavities	Possible	BBA
Lark Bunting (nb)	BOCC	Desert and grassland	Possible	BBA AF - Passage
MacGillivray's Warbler	PIF	High elevation riparian	Possible	BBA AF/UV – Passage TZ - Mention

Species	BOCC/PIF	Habitat Type	PNF?	Reference
Red-naped Sapsucker	PIF	Aspen and mixed conifer	Possible	BBA AF/UV – Passage TZ - Mention
Sage Thrasher	PIF	Cold desert scrub	Possible	BBA AF – Nonbreeding UV - Passage
Gilded Flicker	BOCC/PIF	Sonoran Desertscrub	Possible	BBA – BCR 33
Costa's Hummingbird	BOCC/PIF	Sonoran Desertscrub	Possible	BBA – BCR33 AF - Breeding
Prairie falcon	BOCC	Deserts, grasslands, & cliffs	Possible	BCR 16 & 33 - BBA
Lawrence's goldfinch	BOCC	Riparian	Possible	BCR 33 – BBA AF - Nonbreeding
Pine Grosbeak	PIF	Spruce-fir	Not likely	BBA
Grasshopper Sparrow	BOCC/PIF	Semi-desert and high elevation grasslands, with scattered mesquite & mimosa	No?	No – HDMS/BBA - Southern AZ BCR 16 AF - Mention
Least bittern	BOCC	Tavaci Marsh	Nearby?	BCR 33 – BBA TZ - Breeding

References:

- BBA – Breeding Bird Atlas
- HDMS – Heritage Database Management System (AZGFD Database)
- BCR – Bird Conservation Region – BOCC
- BNA – Birds of North America (online)
- AF – Aqua Fria IBA Species List
- TZ – Tuzigoot IBA Species List
- UV – Upper Verde IBA Species List
- WW – Watson/Willow Lakes IBA Species List
- Tittle – Michael Nicosia – Field notes